

Revitalizing Auto Communities Environmental Response (RACER) Trust

SUPPLEMENTAL LOWER 1,4- DIOXANE PLUME TOE INVESTIGATION

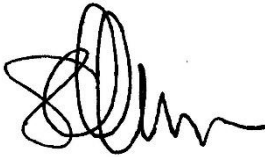
Plant 2
Lansing, Michigan

September 22, 2016

**SUPPLEMENTAL
LOWER 1,4-DIOXANE
PLUME TOE
INVESTIGATION**



Patrick J. Curry, C.P.G.
Senior Geologist



Joseph A. Quinnan, P.E., P.G.
Principal Hydrogeologist/Senior Vice President



Randy Christensen, P.E.
Certified Project Manager

Plant 2
Lansing, Michigan

Prepared by:
Arcadis of Michigan, LLC
28550 Cabot Drive
Suite 500
Novi
Michigan 48377
Tel 248 994 2240
Fax 248 994 2241

Our Ref.:
B0064479.2016.00102
Date:
September 22, 2016

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

CONTENTS

1	Introduction	1
2	Field Activities	1
2.1	Mobile Laboratory	3
2.2	Geology and Hydrogeology	3
2.2.1	Stratigraphy	3
2.2.2	Correlation of Fixed and Mobile Laboratory Results	4
2.3	1,4-Dioxane in Soil and Groundwater	5
2.3.1	Perched 1,4-Dioxane and the Plant 2 LNAPL Area	5
2.3.2	Downgradient Extent of the 1,4-Dioxane	5
2.3.3	Installation of Additional Monitoring Wells	6
3	Conclusions	6
4	References	7

TABLES

Table 1. Mobile Laboratory USEPA Method 8260 Soil Analytical Results

Table 2. Vertical Aquifer Profile Groundwater Analytical Results

Table 3. Monitoring Well Groundwater Analytical Results

FIGURES

Figure 1. Site Location and Summary of Groundwater Impacts

Figure 2. Supplemental Lower 1,4-Dioxane Toe Investigation Locations

Figure 3. Cross-Section A-A'

Figure 4. Cross-Section B-B'

Figure 5. Summary of Supplemental Lower 1,4-Dioxane Toe Investigation Groundwater Results

APPENDICES

- A Basis for Revised Lower 1,4-Dioxane Plume Footprint
- B Boring Logs
- C Cascade Technical Services Analytical Reports and QA/QC Summary
- D Split Sample Analytical Comparison Tables and Graphs
- E Merit Laboratories Analytical Reports

1 INTRODUCTION

Arcadis has prepared this Supplemental Lower 1,4-Dioxane Toe Investigation summary report on behalf of the Revitalizing Auto Communities Environmental Response (RACER) Trust in cooperation with the Michigan Department of Environmental Quality (MDEQ) for Plant 2 located in Lansing, Michigan. This report is intended as a follow-up to the *Lower 1,4-Dioxane Plume Toe Investigation* report (March, 2016a). The activities described below were completed to further evaluate the connection between the perched 1,4-dioxane source area and lower 1,4-dioxane plume, and to better define and evaluate the toe of the lower 1,4-dioxane plume.

Work completed was consistent with the scope described in the Revised – Supplemental Lower 1,4-Dioxane Toe Investigation Work Plan (Work Plan; Arcadis 2016b) provided to the MDEQ on April 22, 2016. The location of the investigation area and an overview of the groundwater impacts associated with 1,4-dioxane are presented as Figure 1. The soil borings and monitoring wells completed as part of this investigation are provided on Figure 2. The specific objectives of this investigation were as follows:

1. Further evaluate the magnitude and potential influence of 1,4-dioxane migration from the Plant 2 light non-aqueous phase liquid (LNAPL) area to weathered bedrock. Determine if 1,4-dioxane sources are isolated or widespread to aid in the selection of a source treatment or plume management strategy.
2. Confirm the extent of the lower 1,4-dioxane plume to the south and southeast and evaluate potential changes to the plume over time.
3. Install a more robust sentinel monitoring network around the toe of the plume, and along the western property boundary.

Note that Figure 1 and Figure 2 include a revised version of the lower 1,4-dioxane plume footprint. The basis for these revisions are provided as Appendix A. Appendix A includes a posting of the highest concentration of 1,4-dioxane detected at each weathered bedrock vertical aquifer profile (VAP) boring, along with the most recent monitoring well results. Based on the VAP results from this supplemental investigation, two small sub-lobes diverge from the core of the lower plume and are potentially associated with leakage from the Plant 2 LNAPL. The revised footprint of the lower 1,4-dioxane plume is discussed further below.

2 FIELD ACTIVITIES

Investigation activities were conducted from June 6 to June 24 and August 17 to August 19, 2016. Soil borings and monitoring wells were completed using sonic drilling techniques. The soil boring and monitoring wells installed as part of these activities are shown on Figure 2. The boring logs are included as Appendix B.

Soil borings were completed around the southeast perimeter of the Plant 2 LNAPL area, southeast and northeast of the LNAPL area, and around the toe of the lower 1,4-dioxane plume. At the locations along the perimeter of the Plant 2 LNAPL area, soil was sampled at high-resolution to further evaluate vertical migration of 1,4-dioxane. At each location, vertical aquifer profile (VAP) groundwater samples were

SUPPLEMENTAL LOWER 1,4-DIOXANE PLUME TOE INVESTIGATION

collected from the weathered bedrock zone to evaluate changes and current extent of lower 1,4-dioxane plume. Based on the VAP results, eleven monitoring wells were installed around the toe of the plume, near the LNAPL area, and along the western property boundary to provide a more robust sentinel monitoring network.

The completed scope of work includes the following:

- Four soil borings were advanced through overburden into the weathered bedrock around the southeast perimeter of the Plant 2 LNAPL area. At each location the following was completed:
 - Whole core soil sampling (WCSS) at nominal 3 to 4 foot intervals through the perched and vadose zone to bedrock.
 - In weathered bedrock, two vertical aquifer profile (VAP) groundwater samples were collected: one near the overburden/weathered rock interface, and one from 5 to 8 feet deeper into the weathered bedrock zone.
- Nine borings were completed around the toe of the 1,4-dioxane plume and the two sub-lobes; four to the southeast and three to the northeast of the Plant 2 LNAPL area, one to the south of well TW-14-02, and one to the southwest of the lower 1,4-dioxane plume. These borings were completed to evaluate changes to the plume and determine locations for sentinel monitoring wells. At each location the following was completed:
 - Upon encountering the weathered bedrock zone, at least two VAP samples were collected, one from near the weathered bedrock interface, and one or two samples from deeper within the weathered zone. Samples were initially collected from consecutive intervals (i.e. 68-73 feet, 73-78 feet). Later in the investigation samples were separated by a three foot interval.
 - At two boring locations (SB-A5.2-OO141 and SB-A5.2-PV104) three VAP samples were collected. At boring OO141, this was completed in an attempt to vertically delineate impacts noted in the first two intervals. At boring PV104, three intervals were proposed to evaluate the potential vertical extent of the lower 1,4-dioxane impacts off the south end of the plume.
- Based on the results of the VAP sampling, monitoring wells were installed at locations indicating 1,4-dioxane less than the proposed criteria of 7.2 micrograms per liter ($\mu\text{g/L}$). Monitoring wells were placed to create a sentinel well spacing of approximate 200 feet around the toe of the plume and along the west property boundary. In addition, monitoring wells were installed adjacent to and northeast of the Plant 2 LNAPL to monitor the apparent 1,4-dioxane contribution from the perched zone through time and evaluate the stability of the plume.
- Soil and groundwater samples were initially evaluated using an on-site mobile laboratory provided by Cascade Technical Services. These samples, which included the WCSS sampling and initial VAP samples, were used to determine step out locations, as necessary. A subset of the samples were split and submitted to Merit Analytical Laboratory (Merit) in Lansing, Michigan for comparative analysis. After the first week of the investigation, additional step-out VAP locations were evaluated on an expedited turnaround by Merit.

2.1 Mobile Laboratory

During the lower 1,4-dioxane toe investigation completed at Plant 2 in the fall of 2015, soil and groundwater samples were analyzed on site by direct ion trap mass spectrometry (DSITMS) using U.S. Environmental Protection Agency (USEPA) Method 8265. Though there was acceptable agreement when compared with split samples analyzed off site by USEPA Method 8260 SIM, the DSITMS 1,4-dioxane soil results were biased low by a factor of three to four. The source of the bias could not be determined.

For the supplemental investigation, Arcadis employed Cascade Technical Services (formally Stone Environmental) to complete the on-site analyses of VOCs and 1,4-dioxane. Rather than DSITMS, Cascade's analysis method is based on solid phase micro extraction (SPME) followed by gas chromatography/mass spectrometry (GC/MS) analysis via EPA Method 8260C. With this approach, both VOCs and 1,4-dioxane are analyzed in a single analytical run.

2.2 Geology and Hydrogeology

The following provides a brief description of the hydrogeologic setting of the lower 1,4-dioxane plume. Additional details, including numerous cross-sections and output from the three-dimensional model, are available as part of the RCRA Facilities Investigation (RFI) Phase 2 reports (Arcadis 2013, 2014). Figures 3 and 4 include cross-sections illustrating the geology in the investigation area.

2.2.1 Stratigraphy

The complex sedimentary environment present at Plant 2 includes a thick sequence of glaciofluvial and glacial till sediments consisting predominantly of clays and silts, with discontinuous layers of sand, silty sand, and occasional gravel. Consistent with the findings of the RFI and previous investigations, the geology of the area investigated as part of the lower 1,4-dioxane toe investigation can be divided into six general hydrostratigraphic units (from shallow to deep):

- Shallow Fill (~0-5 feet ft bgs): Fill that was placed as part of construction – generally poorly sorted clay/silt/sand/gravel.
- Interbedded Zone (~5-30 ft bgs): Consists of predominantly clay with interbedded silt and fine sand seams. The silts and sands are typically saturated below 6 feet.
- Glacial Till (~30-45 ft bgs): Can vary in thickness, but typically dense and dry, and separates the perched zone from the deep overburden vadose zone.
- Deep Overburden (dry) (~45-65 ft bgs): At Plant 2, the deep overburden consists of dry interbedded sand, silt, and glacial tills between the glacial till and deeper saturated weathered bedrock.
- Weathered Bedrock (~65-80 ft bgs): In the northern portion of Plant 2, the zone consists of the higher permeability weathered sandstone of the Grand River Formation and transitions in the north-central portion of Plant 2 to the interbedded shale and fine sandstone of the Saginaw Formation. The weathered zone is gradational, varies in thickness, and transitions vertically to more consolidated bedrock.

SUPPLEMENTAL LOWER 1,4-DIOXANE PLUME TOE INVESTIGATION

- **Bedrock:** In the northern portion of Plant 2 the bedrock consists of the Grand River Formation consisting of fine to medium grained sandstone. The Grand River Formation occupies erosional valleys within the Saginaw Formation, which consists of interbedded shale and fine-grained sandstone. The contact between the two formations occurs in the northwestern portion of Plant 2 with the Grand River Formation located to the northwest, and the Saginaw Formation present to the southeast. All borings completed during this evaluation encountered Saginaw Formation with the exception of borings MW-16-80, located along the western property boundary. The bedrock description at these locations is consistent with Grand River Formation.

At Plant 2 the 1,4-dioxane impacts are encountered in two distinct water-bearing zones:

1. **Perched Zone (~5-30 ft bgs)** – Consists of predominantly clay with interbedded silt and fine sand zones. The more permeable zones are typically saturated below 5 feet and generally limited in extent and connectivity. The interbedded stratigraphy within the perched zone creates variable vertical and horizontal groundwater gradients that make groundwater flow direction difficult to determine. Based on the extent of the perched groundwater impacts, flow away from the Plant 2 LNAPL area appears radial initially, but easterly overall.
2. **Weathered Bedrock (~65-80 ft bgs):** In the lower zone, the groundwater is encountered at approximately 65 to 70 feet below grade. The bedrock surface is deeper at Plant 3 with an area of saturated deep overburden, consisting primarily of interbedded silt and fine sand, near the lower 1,4-dioxane source area (Arcadis 2014b). The lower 1,4-dioxane plume migrates from the Plant 3 source area to the south-southeast. Bedrock becomes shallower to the south, and at Plant 2, the lower 1,4-dioxane plume migrates within the weathered bedrock zone. The bedrock is capped with a low permeability glacial till that creates semi-confined conditions within the weathered bedrock over much of Plant 2.

The cross-sections provided as Figures 3 and 4 include the specific soil descriptions at each boring and a generalized three-category (color) interpolation of the hydrostratigraphy. The hydrostratigraphy is based on permeability; “more permeable” generally includes gravel, sand, and sandy silt, and “less permeable” includes the silt, clay, and clay mixes (glacial till), and then weathered bedrock. Also indicated on the cross-sections are the general water-bearing zones as described above.

2.2.2 Correlation of Fixed and Mobile Laboratory Results

A subset of the soil and groundwater samples analyzed on site for 1,4-dioxane were also analyzed off site at Merit Laboratories using USEPA Method 8260 SIM. Appendix D includes a comparison of the field data and the off-site laboratory analysis.

The analytical comparison indicates the field results are a reliable indicator of 1,4-dioxane in soil and groundwater. The Method 8260 field groundwater results produced by Cascade exhibit strong agreement with the off-site laboratory analysis. A groundwater comparison graph is included in Appendix D.

The soil results analyzed by Method 8260 in the field also exhibit acceptable agreement with the Method 8260 SIM results analyzed in the off-site laboratory. However, there is a similar low bias between the Cascade results and the results from the off-site laboratory and the comparison of results during the first phase of the investigation completed by Triad Environmental Services. The comparisons included in Appendix D show that the soil results are biased low by an average factor of two to three. Based on the

similar bias observed for the two field laboratory methods (i.e. USEPA Method 8265 and 8260), the bias appears to be related to the sample extraction method. Both field laboratories utilize a SPME method to prepare the sample for analysis. The fixed laboratory uses EPA SW-846 Method 5035A High Level extraction with methanol, followed by 8260B Selective Ion Monitoring (SIMs).

Overall, the comparisons indicate the field Method 8260 1,4-dioxane data are of sufficient quality to support the objectives of this evaluation. To be consistent with Table 1, the soil data posted on the cross-sections (Figures 3 and 4) include the DSITMS and field Method 8260 results for soil. Note, however, that these results would likely be higher by a factor of two to four if analyzed by an off-site laboratory employing standard Method 8260 SIM and the 5035A extraction method.

2.3 1,4-Dioxane in Soil and Groundwater

The following sections summarize the key observations from review of the 1,4-dioxane sampling results. Soil and groundwater analytical data are included on Figures 3 through 6 and summarized in Tables 1 through 3. Appendices C and E include the analytical reports from Cascade and Merit.

2.3.1 Perched 1,4-Dioxane and the Plant 2 LNAPL Area

Four additional soil borings were completed along the southeast perimeter of the Plant 2 LNAPL area. A revised version of Cross-section B-B' (Figure 4) includes the soil and groundwater results along the southern and southeast perimeter of the LNAPL, including the four additional borings. Shallow soil samples from the south side of the LNAPL contained 1,4-dioxane at concentrations up to 6,538 µg/kg during the original toe investigation. In addition, 1,4-dioxane extends through the confining till layer and into the vadose zone at several of the original toe boring locations south of the perched LNAPL area. The additional four borings (SB-A5.2-OE130, OB134, NV137 and NQ134) indicated elevated concentrations of 1,4-dioxane at borings NV137 and NQ134 within the perched zone at up to 1,712 µg/kg by field Method 8260 SIM. The new boring locations did not encounter 1,4-dioxane below the perched confining layer.

The highest concentrations of 1,4-dioxane in groundwater within the lower plume are in line with the core of the plume as it migrates south from Plant 3. However, VAP samples collected east of the lower 1,4-dioxane plume core along the perimeter of the Plant 2 LNAPL indicate two sub-lobes that may be attributed, in part, to leakage from the perched zone. The VAP results from the supplemental locations southeast and northeast of the LNAPL further defined the extent of the sub-lobes. Additional work may be required to delineate the northeasterly sub-lobe.

2.3.2 Downgradient Extent of the 1,4-Dioxane

Nine borings were completed around the toe of the 1,4-dioxane plume to evaluate changes to the plume and determine locations for sentinel monitoring wells. As shown on Figures 1 and 2, the VAP groundwater samples revealed two smaller lobes southeast and northeast of the Plant 2 LNAPL area, diverging from the main plume core. Together with the soil sampling along the perched LNAPL perimeter, the VAP groundwater samples suggest leakage from the LNAPL area occurs at lower concentrations relative to the main core of the plume migrating south from Plant 3. In addition, VAP sampling results south of the main lobe of the plume (e.g. SB-A5.3-PA125 and PV104) were consistent with previous 2013 VAP results and indicate the plume is not continuing to migrate south, or is migrating

very slowly. With the exception of the northeasterly sub-lobe, the lower 1,4-dioxane plume was delineated to less than the proposed criteria of 7.2 µg/L.

2.3.3 Installation of Additional Monitoring Wells

Based on the VAP groundwater results, eleven additional monitoring wells were installed during the investigation. Monitoring wells were placed to create a sentinel well spacing of approximate 200 feet around the toe of the plume and along the west property boundary. These wells will serve as additional sentinel wells in the near-term and will be utilized as part of a performance network during the remedy phase. The three weathered bedrock wells installed along the western Plant 2 property boundary will also be used to evaluate the contribution of 1,4-dioxane from the former Adams Plating Facility, if any. Three of the weathered bedrock monitoring wells were installed adjacent to the Plant 2 LNAPL and will be used to monitor the apparent 1,4-dioxane contribution from the perched zone.

As shown on Figure 5, results from the initial sampling of the new monitoring wells were consistent with the VAP results. Concentrations of 1,4-dioxane were less than the proposed criteria of 7.2 µg/L at all locations except MW-16-81 and MW-16-84. These two wells were installed to monitor trends within the northeasterly and southeasterly sub-lobes.

3 CONCLUSIONS

The supplemental lower 1,4-dioxane toe investigation consisted of 13 soil borings and 11 monitoring wells completed from June 6 to June 24 and August 17 to August 19, 2016. Soil was sampled at high resolution to further evaluate the connection between the perched 1,4-dioxane source area and the lower 1,4-dioxane plume. Groundwater was sampled to confirm the extent of the lower 1,4-dioxane plume to the south and southeast and evaluate potential changes to the plume over time. Based on the results of the investigation, Arcadis offers the following conclusions:

- The supplemental investigation results indicate 1,4-dioxane leakage from the Plant 2 LNAPL area to weathered bedrock is limited and may occur in discrete areas.
- Two apparent sub-lobes of the lower 1,4-dioxane plume diverge from the core beneath the Plant 2 LNAPL area. Soil sampling along the perched LNAPL perimeter suggest leakage to the lower plume is limited and corresponding VAP sampling from the weathered bedrock indicates the 1,4-dioxane concentration in groundwater adjacent to the LNAPL area is lower than encountered within the lower 1,4-dioxane plume core.
- 2016 VAP sampling results near borings completed in 2013 confirmed the extent of the lower 1,4-dioxane plume and suggest little to no further migration has occurred to the south or southeast since 2013. The two sub-lobes appear to migrate in easterly directions from the Plant 2 LNAPL area and additional work may be required to delineate the northeasterly lobe.

Groundwater monitoring will continue at existing monitoring wells and the newly installed wells to further evaluate plume stability and monitor for plume migration. As noted, additional work is being evaluated for the Plant 2 LNAPL area to complete characterization of the northeast lobe of the lower 1,4-dioxane plume.

4 REFERENCES

Arcadis. 2013. Resource Conservation and Recovery Act Facility Investigation Phase 2 Activities Summary Report. RACER Trust, Lansing, Michigan Plants 2, 3, and 6. April.

Arcadis. 2014. Resource Conservation and Recovery Act Facility Investigation Supplemental Phase 2 Activities Summary Report. RACER Trust, Lansing, Michigan Plants 2, 3, and 6. February 26.

Arcadis. 2016a. Lower 1,4-Dioxane Plume Toe Investigation. RACER Trust, Lansing, Michigan Plant 2. March 11.

Arcadis. 2016b. Revised – Supplemental Lower 1,4-Dioxane Toe Investigation Work Plan. RACER Trust, Lansing, Michigan Plant 2. April 22.

TABLES



Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-NQ140 1 06/09/16 SB-A5.2-NQ140-1.0_060916	SB-A5.2-NQ140 4 06/09/16 SB-A5.2-NQ140-4.0_060916	SB-A5.2-NQ140 6 06/09/16 SB-A5.2-NQ140-6.0_060916	SB-A5.2-NQ140 9 06/09/16 SB-A5.2-NQ140-9.0_060916	SB-A5.2-NQ140 13.5 06/09/16 SB-A5.2-NQ140-13.5_060916	SB-A5.2-NQ140 15 06/09/16 SB-A5.2-NQ140-15.0_060916	SB-A5.2-NQ140 18 06/09/16 SB-A5.2-NQ140-18.0_060916
Volatile Organics								
1,4-Dioxane	ug/kg	<66.4	<57.6	<59.5	<61.5	<62.2	<59.5 J	<56.3
1,1,1-Trichloroethane	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Bromodichloromethane	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
1,1-Dichloroethane	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
1,1-Dichloroethene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Carbon disulfide	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
cis-1,2-Dichloroethene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
trans-1,2-Dichloroethene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Chloroform (Trichloromethane)	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Trichloroethene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Tetrachloroethene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Vinyl chloride	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Chloroethane	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Benzene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Ethylbenzene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Toluene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
Naphthalene	ug/kg	<33.2 Q	<28.8 Q	<29.8 Q	<30.8 Q	<31.1 Q	<29.8 JQ	<28.2 Q
1,2,4-Trimethylbenzene	ug/kg	<33.2 Q	<28.8 Q	<29.8 Q	<30.8 Q	<31.1 Q	<29.8 JQ	<28.2 Q
o-Xylene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2
m&p-Xylene	ug/kg	<33.2	<28.8	<29.8	<30.8	<31.1	<29.8 J	<28.2

Notes:

Soil results reported on dry weight basis
 < = less than
 µg/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-NQ140 21 06/09/16 SB-A5.2-NQ140-21.0_060916	SB-A5.2-NQ140 24 06/09/16 SB-A5.2-NQ140-24.0_060916	SB-A5.2-NQ140 27 06/09/16 SB-A5.2-NQ140-27.0_060916	SB-A5.2-NQ140 30 06/09/16 SB-A5.2-NQ140-30.0_060916	SB-A5.2-NQ140 33 06/09/16 SB-A5.2-NQ140-33.0_060916	SB-A5.2-NQ140 36 06/09/16 SB-A5.2-NQ140-36.0_060916	SB-A5.2-NQ140 39 06/09/16 SB-A5.2-NQ140-39.0_060916
Volatile Organics								
1,4-Dioxane	ug/kg	<58.2	<55.5	<62.9	<52.4	<61.0	<56.2	<60.7 J
1,1,1-Trichloroethane	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Bromodichloromethane	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
1,1-Dichloroethane	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
1,1-Dichloroethene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Carbon disulfide	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
cis-1,2-Dichloroethene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
trans-1,2-Dichloroethene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Chloroform (Trichloromethane)	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Trichloroethene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Tetrachloroethene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Vinyl chloride	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Chloroethane	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Benzene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Ethylbenzene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Toluene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
Naphthalene	ug/kg	<29.1 Q	<27.7 Q	<31.5 Q	<26.2 Q	<30.5 Q	<28.1 Q	<30.4 JQ
1,2,4-Trimethylbenzene	ug/kg	<29.1 Q	<27.7 Q	<31.5 Q	<26.2 Q	<30.5 Q	<28.1 Q	<30.4 JQ
o-Xylene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J
m&p-Xylene	ug/kg	<29.1	<27.7	<31.5	<26.2	<30.5	<28.1	<30.4 J

Notes:

Soil results reported on dry weight basis
 < = less than
 µg/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-NQ140 42 06/09/16 SB-A5.2-NQ140-42.0_060916	SB-A5.2-NQ140 45 06/09/16 SB-A5.2-NQ140-45.0_060916	SB-A5.2-NQ140 48 06/09/16 SB-A5.2-NQ140-48.0_060916	SB-A5.2-NQ140 52 06/10/16 SB-A5.2-NQ140-52.0_061016	SB-A5.2-NQ140 55 06/10/16 SB-A5.2-NQ140-55.0_061016	SB-A5.2-NQ140 59 06/10/16 SB-A5.2-NQ140-59.0_061016	SB-A5.2-NQ140 62 06/10/16 SB-A5.2-NQ140-62.0_061016
Volatile Organics								
1,4-Dioxane	ug/kg	<56.0	<58.7	<57.8 J	<65.4	<59.5	<55.9	<62.6
1,1,1-Trichloroethane	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Bromodichloromethane	ug/kg	<28.0	<29.3	<28.9 J	12.4 J	<29.7	<28.0	10.3 J
1,1-Dichloroethane	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
1,1-Dichloroethene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Carbon disulfide	ug/kg	<28.0 Q	<29.3 Q	<28.9 JQ	<32.7 Q	<29.7 Q	<28.0 Q	<31.3 Q
cis-1,2-Dichloroethene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
trans-1,2-Dichloroethene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Chloroform (Trichloromethane)	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Trichloroethene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Tetrachloroethene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Vinyl chloride	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Chloroethane	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Benzene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Ethylbenzene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Toluene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
Naphthalene	ug/kg	<28.0 Q	<29.3 Q	<28.9 JQ	<32.7 Q	<29.7 Q	<28.0 Q	<31.3 Q
1,2,4-Trimethylbenzene	ug/kg	<28.0 Q	<29.3 Q	<28.9 JQ	<32.7 Q	<29.7 Q	<28.0 Q	<31.3 Q
o-Xylene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3
m&p-Xylene	ug/kg	<28.0	<29.3	<28.9 J	<32.7	<29.7	<28.0	<31.3

Notes:

Soil results reported on dry weight basis
 < = less than
 µg/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-NQ140 64 06/10/16 SB-A5.2-NQ140-64.0_061016	SB-A5.2-NV137 4.5 06/08/16 SB-A5.2-NV137-4.5_060816	SB-A5.2-NV137 8 06/08/16 SB-A5.2-NV137-8.0_060816	SB-A5.2-NV137 11 06/08/16 SB-A5.2-NV137-11.0_060816	SB-A5.2-NV137 14 06/08/16 SB-A5.2-NV137-14.0_060816	SB-A5.2-NV137 17 06/08/16 SB-A5.2-NV137-17.0_060816	SB-A5.2-NV137 20 06/08/16 SB-A5.2-NV137-20.0_060816
Volatile Organics								
1,4-Dioxane	ug/kg	<62.7	<63.0	<60.3	<92.4	<65.4	<61.6	<62.0
1,1,1-Trichloroethane	ug/kg	<31.4	<31.5	52.8	129	55.9	<30.8	<31.0
Bromodichloromethane	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
1,1-Dichloroethane	ug/kg	<31.4	<31.5	155	157	317	<30.8	<31.0
1,1-Dichloroethene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Carbon disulfide	ug/kg	<31.4 Q	<31.5 Q	<30.2 Q	<46.2 Q	<32.7 Q	<30.8 Q	<31.0 Q
cis-1,2-Dichloroethene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
trans-1,2-Dichloroethene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Chloroform (Trichloromethane)	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Trichloroethene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Tetrachloroethene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Vinyl chloride	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Chloroethane	ug/kg	<31.4	<31.5	33.2	<46.2	91.3	51.7	<31.0
Benzene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Ethylbenzene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Toluene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
Naphthalene	ug/kg	<31.4 Q	<31.5 Q	<30.2 Q	<46.2 Q	<32.7 Q	<30.8 Q	<31.0 Q
1,2,4-Trimethylbenzene	ug/kg	<31.4 Q	<31.5 Q	<30.2 Q	<46.2 Q	<32.7 Q	<30.8 Q	<31.0 Q
o-Xylene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0
m&p-Xylene	ug/kg	<31.4	<31.5	<30.2	<46.2	<32.7	<30.8	<31.0

Notes:

Soil results reported on dry weight basis
 < = less than
 ug/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-NV137 23 06/08/16 SB-A5.2-NV137-23.0_060816	SB-A5.2-NV137 26 06/08/16 SB-A5.2-NV137-26.0_060816	SB-A5.2-NV137 29 06/08/16 SB-A5.2-NV137-29.0_060816	SB-A5.2-NV137 32 06/08/16 SB-A5.2-NV137-32.0_060816	SB-A5.2-NV137 36 06/08/16 SB-A5.2-NV137-36.0_060816	SB-A5.2-NV137 39 06/08/16 SB-A5.2-NV137-39.0_060816	SB-A5.2-NV137 42 06/08/16 SB-A5.2-NV137-42.0_060816
Volatile Organics								
1,4-Dioxane	ug/kg	<58.8	<59.2	<64.0	<60.3	<69.6	<57.5	<62.4
1,1,1-Trichloroethane	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Bromodichloromethane	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
1,1-Dichloroethane	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
1,1-Dichloroethene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Carbon disulfide	ug/kg	<29.4 Q	<29.6 Q	<32.0 Q	<30.1 Q	<34.8 Q	<28.7 Q	<31.2 Q
cis-1,2-Dichloroethene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
trans-1,2-Dichloroethene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Chloroform (Trichloromethane)	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Trichloroethene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Tetrachloroethene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Vinyl chloride	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Chloroethane	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Benzene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Ethylbenzene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Toluene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
Naphthalene	ug/kg	<29.4 Q	<29.6 Q	<32.0 Q	<30.1 Q	<34.8 Q	<28.7 Q	<31.2 Q
1,2,4-Trimethylbenzene	ug/kg	<29.4 Q	<29.6 Q	<32.0 Q	<30.1 Q	<34.8 Q	<28.7 Q	<31.2 Q
o-Xylene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2
m&p-Xylene	ug/kg	<29.4	<29.6	<32.0	<30.1	<34.8	<28.7	<31.2

Notes:

Soil results reported on dry weight basis
 < = less than
 ug/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-NV137 45 06/08/16 SB-A5.2-NV137-45.0_060816	SB-A5.2-NV137 48 06/08/16 SB-A5.2-NV137-48.0_060816	SB-A5.2-NV137 55 06/08/16 SB-A5.2-NV137-55.0_060816	SB-A5.2-NV137 58 06/08/16 SB-A5.2-NV137-58.0_060816	SB-A5.2-OB134 1 06/07/16 SB-A5.2-OB134-1.0_060716	SB-A5.2-OB134 4 06/07/16 SB-A5.2-OB134-4.0_060716	SB-A5.2-OB134 7 06/07/16 SB-A5.2-OB134-7.0_060716
Volatile Organics								
1,4-Dioxane	ug/kg	<59.2	<60.5	<63.6	<61.6	222	<62.7	<59.1
1,1,1-Trichloroethane	ug/kg	<29.6	<30.3	<31.8	<30.8	180	76.5	57.0
Bromodichloromethane	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
1,1-Dichloroethane	ug/kg	<29.6	<30.3	<31.8	<30.8	487	238	17.1 J
1,1-Dichloroethene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
Carbon disulfide	ug/kg	<29.6 Q	<30.3 Q	<31.8	<30.8	<29.7	<31.3	<29.6
cis-1,2-Dichloroethene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
trans-1,2-Dichloroethene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
Chloroform (Trichloromethane)	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
Trichloroethene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
Tetrachloroethene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	16.6 J	20.4 J
Vinyl chloride	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
Chloroethane	ug/kg	<29.6	<30.3	<31.8	<30.8	25.3 J	16.9 J	67.4
Benzene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	3.84 J
Ethylbenzene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
Toluene	ug/kg	<29.6	<30.3	<31.8	15.7 J	<29.7	<31.3	<29.6
Naphthalene	ug/kg	<29.6 Q	<30.3 Q	<31.8 Q	<30.8 Q	<29.7 Q	<31.3 Q	<29.6 Q
1,2,4-Trimethylbenzene	ug/kg	<29.6 Q	<30.3 Q	<31.8 Q	<30.8 Q	<29.7 Q	<31.3 Q	<29.6 Q
o-Xylene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6
m&p-Xylene	ug/kg	<29.6	<30.3	<31.8	<30.8	<29.7	<31.3	<29.6

Notes:

Soil results reported on dry weight basis
 < = less than
 µg/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-OB134 11 06/07/16 SB-A5.2-OB134-11.0_060716	SB-A5.2-OB134 26 06/07/16 SB-A5.2-OB134-26.0_060716	SB-A5.2-OB134 29 06/07/16 SB-A5.2-OB134-29.0_060716	SB-A5.2-OB134 32 06/07/16 SB-A5.2-OB134-32.0_060716	SB-A5.2-OB134 35 06/07/16 SB-A5.2-OB134-35.0_060716	SB-A5.2-OB134 38 06/07/16 SB-A5.2-OB134-38.0_060716	SB-A5.2-OB134 46 06/07/16 SB-A5.2-OB134-46.0_060716
Volatile Organics								
1,4-Dioxane	ug/kg	323	<66.1	<65.7	131	602	644	<65.4
1,1,1-Trichloroethane	ug/kg	472	48.3	50.3	<29.7	<28.7	440	<32.7
Bromodichloromethane	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
1,1-Dichloroethane	ug/kg	1,350	9,110	1,710	416	<28.7	92.2	<32.7
1,1-Dichloroethene	ug/kg	29.1 J	35.4	<32.9	<29.7	<28.7	<35.5	<32.7
Carbon disulfide	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
cis-1,2-Dichloroethene	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
trans-1,2-Dichloroethene	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
Chloroform (Trichloromethane)	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
Trichloroethene	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
Tetrachloroethene	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
Vinyl chloride	ug/kg	82.8	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
Chloroethane	ug/kg	1,850	2,600	4,600	2,870	<28.7	18.8 J	<32.7
Benzene	ug/kg	3.47 J	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
Ethylbenzene	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
Toluene	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
Naphthalene	ug/kg	<31.6 Q	<33.1 Q	<32.9 Q	<29.7 Q	<28.7 Q	<35.5 Q	<32.7 Q
1,2,4-Trimethylbenzene	ug/kg	<31.6 Q	<33.1 Q	<32.9 Q	<29.7 Q	<28.7 Q	<35.5 Q	<32.7 Q
o-Xylene	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7
m&p-Xylene	ug/kg	<31.6	<33.1	<32.9	<29.7	<28.7	<35.5	<32.7

Notes:

Soil results reported on dry weight basis
 < = less than
 µg/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-OB134 50 06/07/16 SB-A5.2-OB134-50.0_060716	SB-A5.2-OB134 52.5 06/07/16 SB-A5.2-OB134-52.5_060716	SB-A5.2-OB134 55 06/07/16 SB-A5.2-OB134-55.0_060716	SB-A5.2-OB134 58 06/07/16 SB-A5.2-OB134-58.0_060716	SB-A5.2-OB134 61 06/07/16 SB-A5.2-OB134-61.0_060716	SB-A5.2-OB134 64 06/07/16 SB-A5.2-OB134-64.0_060716	SB-A5.2-OE130 2 06/06/16 SB-A5.2-OE130-2.0_060616
Volatile Organics								
1,4-Dioxane	ug/kg	<63.8	<58.3	<57.9	<58.3	<60.6	<63.6	<63.7
1,1,1-Trichloroethane	ug/kg	26.1 J	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
Bromodichloromethane	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
1,1-Dichloroethane	ug/kg	19.1 J	<29.2	<29.0	<29.1	<30.3	<31.8	12.7 J
1,1-Dichloroethene	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
Carbon disulfide	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	12.1 J	<31.9
cis-1,2-Dichloroethene	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
trans-1,2-Dichloroethene	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
Chloroform (Trichloromethane)	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
Trichloroethene	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
Tetrachloroethene	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
Vinyl chloride	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
Chloroethane	ug/kg	<31.9	<29.2	<29.0	<29.1	<30.3	<31.8	<31.9
Benzene	ug/kg	<31.9	<29.2	354	7.28 J	<30.3	<31.8	<31.9
Ethylbenzene	ug/kg	<31.9	<29.2	202	<29.1	<30.3	<31.8	<31.9
Toluene	ug/kg	<31.9	<29.2	636	13.7 J	<30.3	<31.8	<31.9
Naphthalene	ug/kg	<31.9 Q	<29.2 Q	43.1 Q	<29.1 Q	<30.3 Q	<31.8 Q	<31.9 Q
1,2,4-Trimethylbenzene	ug/kg	<31.9 Q	<29.2 Q	71.2 Q	<29.1 Q	<30.3 Q	<31.8 Q	<31.9 Q
o-Xylene	ug/kg	<31.9	<29.2	183	<29.1	<30.3	<31.8	<31.9
m&p-Xylene	ug/kg	<31.9	<29.2	137	<29.1	<30.3	<31.8	<31.9

Notes:

Soil results reported on dry weight basis
 < = less than
 µg/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
Mobile Laboratory USEPA Method 8260 Soil Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-OE130 5 06/06/16 SB-A5.2-OE130-5.0_060616	SB-A5.2-OE130 9 06/06/16 SB-A5.2-OE130-9.0_060616	SB-A5.2-OE130 28 06/06/16 SB-A5.2-OE130-28.0_060616	SB-A5.2-OE130 33 06/06/16 SB-A5.2-OE130-33.0_060616	SB-A5.2-OE130 37 06/06/16 SB-A5.2-OE130-37.0_060616	SB-A5.2-OE130 41 06/06/16 SB-A5.2-OE130-41.0_060616	SB-A5.2-OE130 47 06/06/16 SB-A5.2-OE130-47.0_060616
Volatile Organics								
1,4-Dioxane	ug/kg	<72.7	<72.4	110	1,520	1,920	<65.7	<64.3
1,1,1-Trichloroethane	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Bromodichloromethane	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
1,1-Dichloroethane	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
1,1-Dichloroethene	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Carbon disulfide	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
cis-1,2-Dichloroethene	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
trans-1,2-Dichloroethene	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Chloroform (Trichloromethane)	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Trichloroethene	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Tetrachloroethene	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Vinyl chloride	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Chloroethane	ug/kg	<36.4	23.5 J	<33.2	<35.6	<36.4	<32.8	<32.1
Benzene	ug/kg	<36.4	11.6 J	<33.2	<35.6	<36.4	<32.8	<32.1
Ethylbenzene	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Toluene	ug/kg	<36.4	<36.2	<33.2	<35.6	<36.4	<32.8	<32.1
Naphthalene	ug/kg	44.4 Q	181 Q	<33.2 Q	<35.6 Q	<36.4 Q	<32.8 Q	<32.1 Q
1,2,4-Trimethylbenzene	ug/kg	<36.4 Q	34.4 JQ	<33.2 Q	<35.6 Q	<36.4 Q	<32.8 Q	<32.1 Q
o-Xylene	ug/kg	<36.4	23.5 J	<33.2	<35.6	<36.4	<32.8	<32.1
m&p-Xylene	ug/kg	<36.4	22.8 J	<33.2	<35.6	<36.4	<32.8	<32.1

Notes:

Soil results reported on dry weight basis
 < = less than
 µg/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 1
 Mobile Laboratory USEPA Method 8260 Soil Analytical Results
 Supplemental Lower 1,4-Dioxane Toe Investigation
 Plants 2,3, and 6 Industrial Land
 Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	Units	SB-A5.2-OE130 53 06/06/16 SB-A5.2-OE130-53.0_060616	SB-A5.2-OE130 56 06/06/16 SB-A5.2-OE130-56.0_060616	SB-A5.2-OE130 61 06/06/16 SB-A5.2-OE130-61.0_060616	SB-A5.2-OE130 64 06/06/16 SB-A5.2-OE130-64.0_060616
Volatile Organics					
1,4-Dioxane	ug/kg	<66.5	<78.8	<95.0	<65.3
1,1,1-Trichloroethane	ug/kg	<33.2	<39.4	<47.5	<32.6
Bromodichloromethane	ug/kg	<33.2	<39.4	<47.5	<32.6
1,1-Dichloroethane	ug/kg	<33.2	<39.4	<47.5	<32.6
1,1-Dichloroethene	ug/kg	<33.2	<39.4	<47.5	<32.6
Carbon disulfide	ug/kg	<33.2	<39.4	16.6 J	16.0 J
cis-1,2-Dichloroethene	ug/kg	<33.2	<39.4	<47.5	<32.6
trans-1,2-Dichloroethene	ug/kg	<33.2	<39.4	<47.5	<32.6
Chloroform (Trichloromethane)	ug/kg	<33.2	<39.4	<47.5	<32.6
Trichloroethene	ug/kg	<33.2	<39.4	<47.5	<32.6
Tetrachloroethene	ug/kg	<33.2	<39.4	<47.5	<32.6
Vinyl chloride	ug/kg	<33.2	<39.4	<47.5	<32.6
Chloroethane	ug/kg	<33.2	<39.4	<47.5	<32.6
Benzene	ug/kg	<33.2	<39.4	<47.5	<32.6
Ethylbenzene	ug/kg	<33.2	<39.4	<47.5	<32.6
Toluene	ug/kg	<33.2	<39.4	<47.5	<32.6
Naphthalene	ug/kg	<33.2 Q	<39.4 Q	<47.5 Q	<32.6 Q
1,2,4-Trimethylbenzene	ug/kg	<33.2 Q	<39.4 Q	<47.5 Q	<32.6 Q
o-Xylene	ug/kg	<33.2	<39.4	<47.5	<32.6
m&p-Xylene	ug/kg	<33.2	<39.4	<47.5	<32.6

Notes:

Soil results reported on dry weight basis
 < = less than
 µg/kg = micrograms per kilogram
 J = Estimated value
 Q = Associated with quality control failure
 USEPA = United States Environmental Protection Agency

Table 2
Vertical Aquifer Profile Groundwater Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Laboratory: Analytical Method:	MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI	Units	SB-A5.2-ND132 67 - 72 08/19/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-ND132 74 - 79 08/19/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-ND140 72 - 77 08/17/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-ND140 79 - 84 08/18/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-NK140 67 - 72 08/18/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-NK140 74 - 79 08/19/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-NQ140-GW 65 - 70 06/10/16 Cascade USEPA Method 8260	SB-A5.2-NQ140-GW 73 - 78 06/10/16 Cascade USEPA Method 8260
Volatile Organics											
1,2-Dibromo-3-chloropropane (DBCP)	0.2	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,2-Dichlorobenzene	600	13	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,4-Dichlorobenzene	75	17	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,4-Dioxane	85	2,800	ug/L	191	90	85	54 [54]	64	59	1.71 J	11.3
1,1,1-Trichloroethane	200	89	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
2-Hexanone	1,000	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Acetone	730	1,700	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,1,2-Trichloroethane	5	330	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Bromodichloromethane	80	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	0.540 J	<1.00
1,1-Dichloroethane	880	740	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
Bromoform	80	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,1-Dichloroethene	7	130	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
Bromomethane (Methyl bromide)	10	35	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,2-Dichloroethane	5	360	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Carbon disulfide	800	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00 Q	<1.00 Q
Carbon tetrachloride	5	45	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
cis-1,2-Dichloroethene	70	620	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
Chlorobenzene	100	25	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
Chloroform (Trichloromethane)	80	350	ug/L	NA	NA	NA	NA [NA]	NA	NA	1.01	0.300 J
Trichloroethene	5	200	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
Chloromethane (Methyl chloride)	260	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Tetrachloroethene	5	60	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
cis-1,3-Dichloropropene	--	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Vinyl chloride	2	13	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
Chloroethane	430	1,100	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
Dichlorodifluoromethane (CFC-12)	1,700	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Benzene	5	200	ug/L	NA	NA	NA	NA [NA]	NA	NA	0.200 J	0.960 J
Methyl acetate	--	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Ethylbenzene	74	18	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
Methylene chloride	5	1,500	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Styrene	100	80	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Toluene	790	270	ug/L	NA	NA	NA	NA [NA]	NA	NA	0.680 J	16.0
trans-1,3-Dichloropropene	--	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Trichlorofluoromethane (CFC-11)	2,600	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Naphthalene	520	11	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00 Q	<1.00 Q
Trifluorotrchloroethane (Freon 113)	170,000	32	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,2,4-Trichlorobenzene	70	99	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00 Q	<1.00 Q
1,2-Dichloropropane	5	230	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
1,3-Dichlorobenzene	6.6	28	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Cyclohexane	--	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Methyl cyclohexane	--	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Dibromochloromethane	80	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
Isopropyl benzene	800	28	ug/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA
o-Xylene	--	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00
m&p-Xylene	--	--	ug/L	NA	NA	NA	NA [NA]	NA	NA	<1.00	<1.00

Notes:

- Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria and Screening Levels, Dated December 30, 2013.
- Data shown in [] represent duplicate sample analytical results.
- = Not listed in the MDEQ Criteria Tables.
- ^a - Sample exceeds Residential Drinking Water Criteria.
- < = less than
- µg/L = micrograms per liter
- J = Estimated value
- Q = Associated with quality control failure
- USEPA = United States Environmental Protection Agency
- NA = Not analyzed
- Merit = Merit Laboratories, Inc.
- Cascade = Cascade Technical Services

Table 2
Vertical Aquifer Profile Groundwater Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Laboratory: Analytical Method:	MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI	Units	SB-A5.2-NQ140 73 - 78 06/10/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-NV137-GW 60 - 65 06/08/16 Cascade USEPA Method 8260	SB-A5.2-NV137 60 - 65 06/08/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-NV137-GW 65 - 70 06/09/16 Cascade USEPA Method 8260	SB-A5.2-NV137 65 - 70 06/09/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-OB134-GW 65 - 70 06/08/16 Cascade USEPA Method 8260	SB-A5.2-OB134 65 - 70 06/08/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-OB134-GW 70 - 75 06/08/16 Cascade USEPA Method 8260
Volatile Organics											
1,2-Dibromo-3-chloropropane (DBCP)	0.2	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,2-Dichlorobenzene	600	13	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,4-Dichlorobenzene	75	17	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,4-Dioxane	85	2,800	ug/L	11	<2.00	<3	<2.00	<3	4.48	6	3.36
1,1,1-Trichloroethane	200	89	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
2-Hexanone	1,000	--	ug/L	<10	NA	<10	NA	<10	NA	<10	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Acetone	730	1,700	ug/L	21	NA	<10	NA	<10	NA	<10	NA
1,1,2-Trichloroethane	5	330	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Bromodichloromethane	80	--	ug/L	<1	<1.00	<1	0.700 J	<1	<1.00	<1	<1.00
1,1-Dichloroethane	880	740	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Bromoform	80	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,1-Dichloroethene	7	130	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Bromomethane (Methyl bromide)	10	35	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,2-Dichloroethane	5	360	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Carbon disulfide	800	--	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Carbon tetrachloride	5	45	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
cis-1,2-Dichloroethene	70	620	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Chlorobenzene	100	25	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Chloroform (Trichloromethane)	80	350	ug/L	<1	0.900 J	1	1.52	1	<1.00	<1	0.620 J
Trichloroethene	5	200	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Chloromethane (Methyl chloride)	260	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Tetrachloroethene	5	60	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
cis-1,3-Dichloropropene	--	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Vinyl chloride	2	13	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Chloroethane	430	1,100	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Dichlorodifluoromethane (CFC-12)	1,700	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Benzene	5	200	ug/L	1	<1.00	<1	<1.00	<1	<1.00	<1	0.200 J
Methyl acetate	--	--	ug/L	<10	NA	<10	NA	<10	NA	<10	NA
Ethylbenzene	74	18	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Methylene chloride	5	1,500	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Styrene	100	80	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Toluene	790	270	ug/L	10	<1.00	<1	0.360 J	<1	7.61	10	0.410 J
trans-1,3-Dichloropropene	--	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Trichlorofluoromethane (CFC-11)	2,600	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Naphthalene	520	11	ug/L	NA	<1.00 Q	NA	<1.00 Q	NA	<1.00 Q	NA	<1.00 Q
Trifluorotrchloroethane (Freon 113)	170,000	32	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<10	NA	<10	NA	<10	NA	<10	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	--	ug/L	<10	NA	<10	NA	<10	NA	<10	NA
1,2,4-Trichlorobenzene	70	99	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	<1.00 Q	NA	<1.00 Q	NA	<1.00 Q	NA	<1.00 Q
1,2-Dichloropropane	5	230	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,3-Dichlorobenzene	6.6	28	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Cyclohexane	--	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Methyl cyclohexane	--	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Dibromochloromethane	80	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Isopropyl benzene	800	28	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
o-Xylene	--	--	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
m&p-Xylene	--	--	ug/L	<2	<1.00	<2	<1.00	<2	<1.00	<2	<1.00

Notes:

- Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria and
- Data shown in [] represent duplicate sample analytical results.
- = Not listed in the MDEQ Criteria Tables.
- ^a - Sample exceeds Residential Drinking Water Criteria.
- < = less than
- µg/L = micrograms per liter
- J = Estimated value
- Q = Associated with quality control failure
- USEPA = United States Environmental Protection Agency
- NA = Not analyzed
- Merit = Merit Laboratories, Inc.
- Cascade = Cascade Technical Services

Table 2
Vertical Aquifer Profile Groundwater Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Laboratory: Analytical Method:	MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI	Units	SB-A5.2-OB134 70 - 75 06/08/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-OE130-GW 65 - 70 06/07/16 Cascade USEPA Method 8260	SB-A5.2-OE130 65 - 70 06/07/16 Merit USEPA Method 8260/8260-SIM	SB-A5.2-OE130-GW 70 - 75 06/07/16 Cascade USEPA Method 8260	SB-A5.2-OE130 70 - 75 06/07/16 Merit USEPA Method 8260/8260-SIM	SB-A5.3-00141-GW 58 - 63 06/09/16 Cascade USEPA Method 8260	SB-A5.3-00141 58 - 63 06/09/16 Merit USEPA Method 8260/8260-SIM	SB-A5.3-00141-GW 63 - 68 06/09/16 Cascade USEPA Method 8260
Volatile Organics											
1,2-Dibromo-3-chloropropane (DBCP)	0.2	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,2-Dichlorobenzene	600	13	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,4-Dichlorobenzene	75	17	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,4-Dioxane	85	2,800	ug/L	3	<2.00	<3	<2.00	<3	3.55	<3	40.3
1,1,1-Trichloroethane	200	89	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
2-Hexanone	1,000	--	ug/L	<10	NA	<10	NA	<10	NA	<10	NA
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Acetone	730	1,700	ug/L	<10	NA	<10	NA	<10	NA	20	NA
1,1,2-Trichloroethane	5	330	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Bromodichloromethane	80	--	ug/L	<1	0.280 J	<1	0.350 J	<1	0.570 J	<1	<1.00
1,1-Dichloroethane	880	740	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Bromoform	80	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,1-Dichloroethene	7	130	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Bromomethane (Methyl bromide)	10	35	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,2-Dichloroethane	5	360	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Carbon disulfide	800	--	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Carbon tetrachloride	5	45	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
cis-1,2-Dichloroethene	70	620	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Chlorobenzene	100	25	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Chloroform (Trichloromethane)	80	350	ug/L	<1	0.720 J	<1	0.960 J	1	1.22	1	0.400 J
Trichloroethene	5	200	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Chloromethane (Methyl chloride)	260	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Tetrachloroethene	5	60	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
cis-1,3-Dichloropropene	--	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Vinyl chloride	2	13	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Chloroethane	430	1,100	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Dichlorodifluoromethane (CFC-12)	1,700	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Benzene	5	200	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Methyl acetate	--	--	ug/L	<10	NA	<10	NA	<10	NA	<10	NA
Ethylbenzene	74	18	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
Methylene chloride	5	1,500	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Styrene	100	80	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Toluene	790	270	ug/L	<1	0.610 J	<1	1.27	1	0.490 J	<1	28.3
trans-1,3-Dichloropropene	--	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Trichlorofluoromethane (CFC-11)	2,600	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Naphthalene	520	11	ug/L	NA	<1.00 Q	NA	<1.00 Q	NA	<1.00 Q	NA	<1.00 Q
Trifluorotrchloroethane (Freon 113)	170,000	32	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<10	NA	<10	NA	<10	NA	<10	NA
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	--	ug/L	<10	NA	<10	NA	<10	NA	<10	NA
1,2,4-Trichlorobenzene	70	99	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,2,4-Trimethylbenzene	63	17	ug/L	NA	<1.00 Q	NA	<1.00 Q	NA	<1.00 Q	NA	<1.00 Q
1,2-Dichloropropane	5	230	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
1,3-Dichlorobenzene	6.6	28	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Cyclohexane	--	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Methyl cyclohexane	--	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Dibromochloromethane	80	--	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
Isopropyl benzene	800	28	ug/L	<1	NA	<1	NA	<1	NA	<1	NA
o-Xylene	--	--	ug/L	<1	<1.00	<1	<1.00	<1	<1.00	<1	<1.00
m&p-Xylene	--	--	ug/L	<2	<1.00	<2	<1.00	<2	<1.00	<2	<1.00

Notes:

- Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria and
- Data shown in [] represent duplicate sample analytical results.
- = Not listed in the MDEQ Criteria Tables.
- ^a - Sample exceeds Residential Drinking Water Criteria.
- < = less than
- µg/L = micrograms per liter
- J = Estimated value
- Q = Associated with quality control failure
- USEPA = United States Environmental Protection Agency
- NA = Not analyzed
- Merit = Merit Laboratories, Inc.
- Cascade = Cascade Technical Services

Table 2
Vertical Aquifer Profile Groundwater Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Laboratory: Analytical Method:	MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI	Units	SB-A5.3-00141 63 - 68 06/09/16 Merit USEPA Method 8260/8260-SIM	SB-A5.3-00141 68 - 73 06/10/16 Merit USEPA Method 8260/8260-SIM	SB-A5.3-OR159 62 - 67 06/13/16 Merit USEPA Method 8260/8260-SIM	SB-A5.3-OR159 70 - 75 06/13/16 Merit USEPA Method 8260/8260-SIM	SB-A5.3-PA125-GW 62 - 67 06/09/16 Cascade USEPA Method 8260	SB-A5.3-PA125 62 - 67 06/09/16 Merit USEPA Method 8260/8260-SIM	SB-A5.3-PA125-GW 67 - 72 06/10/16 Cascade USEPA Method 8260	SB-A5.3-PA147 68 - 73 06/14/16 Merit USEPA Method 8260/8260-SIM
Volatile Organics											
1,2-Dibromo-3-chloropropane (DBCP)	0.2	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
1,2-Dichlorobenzene	600	13	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
1,4-Dichlorobenzene	75	17	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
1,4-Dioxane	85	2,800	ug/L	42	59	<3	<3	<2.00	3	<2.00	<3
1,1,1-Trichloroethane	200	89	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
2-Hexanone	1,000	--	ug/L	<10	<10	<10	<10	NA	<10	NA	<10
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Acetone	730	1,700	ug/L	50	12	<10	<10	NA	15	NA	<10
1,1,2-Trichloroethane	5	330	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Bromodichloromethane	80	--	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
1,1-Dichloroethane	880	740	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Bromoform	80	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
1,1-Dichloroethene	7	130	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Bromomethane (Methyl bromide)	10	35	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
1,2-Dichloroethane	5	360	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Carbon disulfide	800	--	ug/L	<1	<1	<1	<1	<1.00 Q	<1	<1.00 Q	<1
Carbon tetrachloride	5	45	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
cis-1,2-Dichloroethene	70	620	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Chlorobenzene	100	25	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Chloroform (Trichloromethane)	80	350	ug/L	<1	<1	1	<1	0.890 J	<1	<1.00	<1
Trichloroethene	5	200	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Chloromethane (Methyl chloride)	260	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Tetrachloroethene	5	60	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
cis-1,3-Dichloropropene	--	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Vinyl chloride	2	13	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Chloroethane	430	1,100	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Dichlorodifluoromethane (CFC-12)	1,700	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Benzene	5	200	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Methyl acetate	--	--	ug/L	<10	<10	<10	<10	NA	<10	NA	<10
Ethylbenzene	74	18	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
Methylene chloride	5	1,500	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Styrene	100	80	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Toluene	790	270	ug/L	5	2	2	<1	0.660 J	<1	7.54	<1
trans-1,3-Dichloropropene	--	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Trichlorofluoromethane (CFC-11)	2,600	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Naphthalene	520	11	ug/L	NA	NA	NA	NA	<1.00 Q	NA	<1.00 Q	NA
Trifluorotrchloroethane (Freon 113)	170,000	32	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<10	<10	<10	<10	NA	<10	NA	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	--	ug/L	<10	<10	<10	<10	NA	<10	NA	<10
1,2,4-Trichlorobenzene	70	99	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
1,2,4-Trimethylbenzene	63	17	ug/L	NA	NA	NA	NA	<1.00 Q	NA	<1.00 Q	NA
1,2-Dichloropropane	5	230	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
1,3-Dichlorobenzene	6.6	28	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Cyclohexane	--	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Methyl cyclohexane	--	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Dibromochloromethane	80	--	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
Isopropyl benzene	800	28	ug/L	<1	<1	<1	<1	NA	<1	NA	<1
o-Xylene	--	--	ug/L	<1	<1	<1	<1	<1.00	<1	<1.00	<1
m&p-Xylene	--	--	ug/L	<2	<2	<2	<2	<1.00	<2	<1.00	<2

Notes:

- Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria and
- Data shown in [] represent duplicate sample analytical results.
- = Not listed in the MDEQ Criteria Tables.
- ^a - Sample exceeds Residential Drinking Water Criteria.
- < = less than
- µg/L = micrograms per liter
- J = Estimated value
- Q = Associated with quality control failure
- USEPA = United States Environmental Protection Agency
- NA = Not analyzed
- Merit = Merit Laboratories, Inc.
- Cascade = Cascade Technical Services

Table 2
Vertical Aquifer Profile Groundwater Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Laboratory: Analytical Method:	MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI	Units	SB-A5.3-PA147 76 - 81 06/14/16 Merit USEPA Method 8260/8260-SIM	SB-A5.3-PV104-GW 62 - 67 06/10/16 Cascade USEPA Method 8260	SB-A5.3-PV104-GW 70 - 75 06/10/16 Cascade USEPA Method 8260	SB-A5.3-PV104-GW 78 - 83 06/10/16 Cascade USEPA Method 8260	SB-P2-PP85 60 - 65 06/13/16 Merit USEPA Method 8260/8260-SIM	SB-P2-PP85 68 - 73 06/13/16 Merit USEPA Method 8260/8260-SIM
Volatile Organics									
1,2-Dibromo-3-chloropropane (DBCP)	0.2	--	ug/L	<1	NA	NA	NA	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	NA	NA	NA	<1	<1
1,2-Dichlorobenzene	600	13	ug/L	<1	NA	NA	NA	<1	<1
1,4-Dichlorobenzene	75	17	ug/L	<1	NA	NA	NA	<1	<1
1,4-Dioxane	85	2,800	ug/L	<3	<2.00	<2.00	<2.00	<3	<3
1,1,1-Trichloroethane	200	89	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
2-Hexanone	1,000	--	ug/L	<10	NA	NA	NA	<10	<10
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	NA	NA	NA	<1	<1
Acetone	730	1,700	ug/L	<10	NA	NA	NA	<10	<10
1,1,2-Trichloroethane	5	330	ug/L	<1	NA	NA	NA	<1	<1
Bromodichloromethane	80	--	ug/L	<1	0.620 J	0.180 J	0.280 J	<1	<1
1,1-Dichloroethane	880	740	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
Bromoform	80	--	ug/L	<1	NA	NA	NA	<1	<1
1,1-Dichloroethene	7	130	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
Bromomethane (Methyl bromide)	10	35	ug/L	<1	NA	NA	NA	<1	<1
1,2-Dichloroethane	5	360	ug/L	<1	NA	NA	NA	<1	<1
Carbon disulfide	800	--	ug/L	<1	<1.00 Q	<1.00 Q	<1.00 Q	<1	<1
Carbon tetrachloride	5	45	ug/L	<1	NA	NA	NA	<1	<1
cis-1,2-Dichloroethene	70	620	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
Chlorobenzene	100	25	ug/L	<1	NA	NA	NA	<1	<1
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
Chloroform (Trichloromethane)	80	350	ug/L	<1	1.31	0.480 J	0.710 J	2	1
Trichloroethene	5	200	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
Chloromethane (Methyl chloride)	260	--	ug/L	<1	NA	NA	NA	<1	<1
Tetrachloroethene	5	60	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
cis-1,3-Dichloropropene	--	--	ug/L	<1	NA	NA	NA	<1	<1
Vinyl chloride	2	13	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
Chloroethane	430	1,100	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
Dichlorodifluoromethane (CFC-12)	1,700	--	ug/L	<1	NA	NA	NA	<1	<1
Benzene	5	200	ug/L	<1	0.180 J	<1.00	<1.00	<1	<1
Methyl acetate	--	--	ug/L	<10	NA	NA	NA	<10	<10
Ethylbenzene	74	18	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
Methylene chloride	5	1,500	ug/L	<1	NA	NA	NA	<1	<1
Styrene	100	80	ug/L	<1	NA	NA	NA	<1	<1
Toluene	790	270	ug/L	<1	2.08	6.03	0.430 J	3	1
trans-1,3-Dichloropropene	--	--	ug/L	<1	NA	NA	NA	<1	<1
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<1	NA	NA	NA	<1	<1
Trichlorofluoromethane (CFC-11)	2,600	--	ug/L	<1	NA	NA	NA	<1	<1
Naphthalene	520	11	ug/L	NA	<1.00 Q	<1.00 Q	<1.00 Q	NA	NA
Trifluorotrchloroethane (Freon 113)	170,000	32	ug/L	<1	NA	NA	NA	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<10	NA	NA	NA	<10	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	--	ug/L	<10	NA	NA	NA	<10	<10
1,2,4-Trichlorobenzene	70	99	ug/L	<1	NA	NA	NA	<1	<1
1,2,4-Trimethylbenzene	63	17	ug/L	NA	<1.00 Q	<1.00 Q	<1.00 Q	NA	NA
1,2-Dichloropropane	5	230	ug/L	<1	NA	NA	NA	<1	<1
1,3-Dichlorobenzene	6.6	28	ug/L	<1	NA	NA	NA	<1	<1
Cyclohexane	--	--	ug/L	<1	NA	NA	NA	<1	<1
Methyl cyclohexane	--	--	ug/L	<1	NA	NA	NA	<1	<1
Dibromochloromethane	80	--	ug/L	<1	NA	NA	NA	<1	<1
Isopropyl benzene	800	28	ug/L	<1	NA	NA	NA	<1	<1
o-Xylene	--	--	ug/L	<1	<1.00	<1.00	<1.00	<1	<1
m&p-Xylene	--	--	ug/L	<2	<1.00	<1.00	<1.00	<2	<2

Notes:

- Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria and
- Data shown in [] represent duplicate sample analytical results.
- = Not listed in the MDEQ Criteria Tables.
- ^a - Sample exceeds Residential Drinking Water Criteria.
- < = less than
- µg/L = micrograms per liter
- J = Estimated value
- Q = Associated with quality control failure
- USEPA = United States Environmental Protection Agency
- NA = Not analyzed
- Merit = Merit Laboratories, Inc.
- Cascade = Cascade Technical Services

Table 3
 Monitoring Well Groundwater Analytical Results
 Supplemental Lower 1,4-Dioxane Toe Investigation
 Plants 2,3, and 6 Industrial Land
 Lansing, Michigan

Location ID: Date Collected: Sample Name:	MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI	Units	MW-16-74 06/28/16 MW-16-74 (062816)	MW-16-75 06/27/16 MW-16-75 (062716)	MW-16-76 06/28/16 MW-16-76 (062816)	MW-16-77 06/28/16 MW-16-77 (062816)	MW-16-78 06/27/16 MW-16-78 (062716)	MW-16-79 06/28/16 MW-16-79 (062816)
Volatile Organics									
1,2-Dibromo-3-chloropropane (DBCP)	0.2	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,2-Dichlorobenzene	600	13	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,4-Dichlorobenzene	75	17	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,4-Dioxane	85	2,800	ug/L	<3	<3	<3 [<3]	3	<3	4
1,1,1-Trichloroethane	200	89	ug/L	<1	<1	<1 [<1]	<1	<1	<1
2-Hexanone	1,000	--	ug/L	<10	<10	<10 [<10]	<10	<10	<10
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Acetone	730	1,700	ug/L	72	<10	<10 [<10]	<10	<10	41
1,1,2-Trichloroethane	5	330	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Bromodichloromethane	80	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,1-Dichloroethane	880	740	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Bromoform	80	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,1-Dichloroethene	7	130	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Bromomethane (Methyl bromide)	10	35	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,2-Dichloroethane	5	360	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Carbon disulfide	800	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Carbon tetrachloride	5	45	ug/L	<1	<1	<1 [<1]	<1	<1	<1
cis-1,2-Dichloroethene	70	620	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Chlorobenzene	100	25	ug/L	<1	<1	<1 [<1]	<1	<1	<1
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Chloroform (Trichloromethane)	80	350	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Trichloroethene	5	200	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Chloromethane (Methyl chloride)	260	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Tetrachloroethene	5	60	ug/L	<1	<1	<1 [<1]	<1	<1	<1
cis-1,3-Dichloropropene	--	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Vinyl chloride	2	13	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Chloroethane	430	1,100	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Dichlorodifluoromethane (CFC-12)	1,700	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Benzene	5	200	ug/L	<1	1	<1 [<1]	<1	<1	<1
Methyl acetate	--	--	ug/L	<10	<10	<10 [<10]	<10	<10	<10
Ethylbenzene	74	18	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Methylene chloride	5	1,500	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Styrene	100	80	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Toluene	790	270	ug/L	1	2	5 [5]	5	2	1
trans-1,3-Dichloropropene	--	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Trichlorofluoromethane (CFC-11)	2,600	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Trifluorotrchloroethane (Freon 113)	170,000	32	ug/L	<1	<1	<1 [<1]	<1	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	17	<10	<10 [<10]	37	<10	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	--	ug/L	<10	<10	<10 [<10]	<10	<10	<10
1,2,4-Trichlorobenzene	70	99	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,2-Dichloropropane	5	230	ug/L	<1	<1	<1 [<1]	<1	<1	<1
1,3-Dichlorobenzene	6.6	28	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Cyclohexane	--	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Methyl cyclohexane	--	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Dibromochloromethane	80	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
Isopropyl benzene	800	28	ug/L	<1	<1	<1 [<1]	<1	<1	<1
o-Xylene	--	--	ug/L	<1	<1	<1 [<1]	<1	<1	<1
m&p-Xylene	--	--	ug/L	<2	<2	<2 [<2]	<2	<2	<2

Notes:

- Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria and Screening Levels, Dated December 30, 2013.
- Data shown in [] represent duplicate sample analytical results.
- = Not listed in the MDEQ Criteria Tables.
- ^a - Sample exceeds Residential Drinking Water Criteria.
- < = less than
- ug/L = micrograms per liter
- USEPA = United States Environmental Protection Agency

Table 3
Monitoring Well Groundwater Analytical Results
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2,3, and 6 Industrial Land
Lansing, Michigan

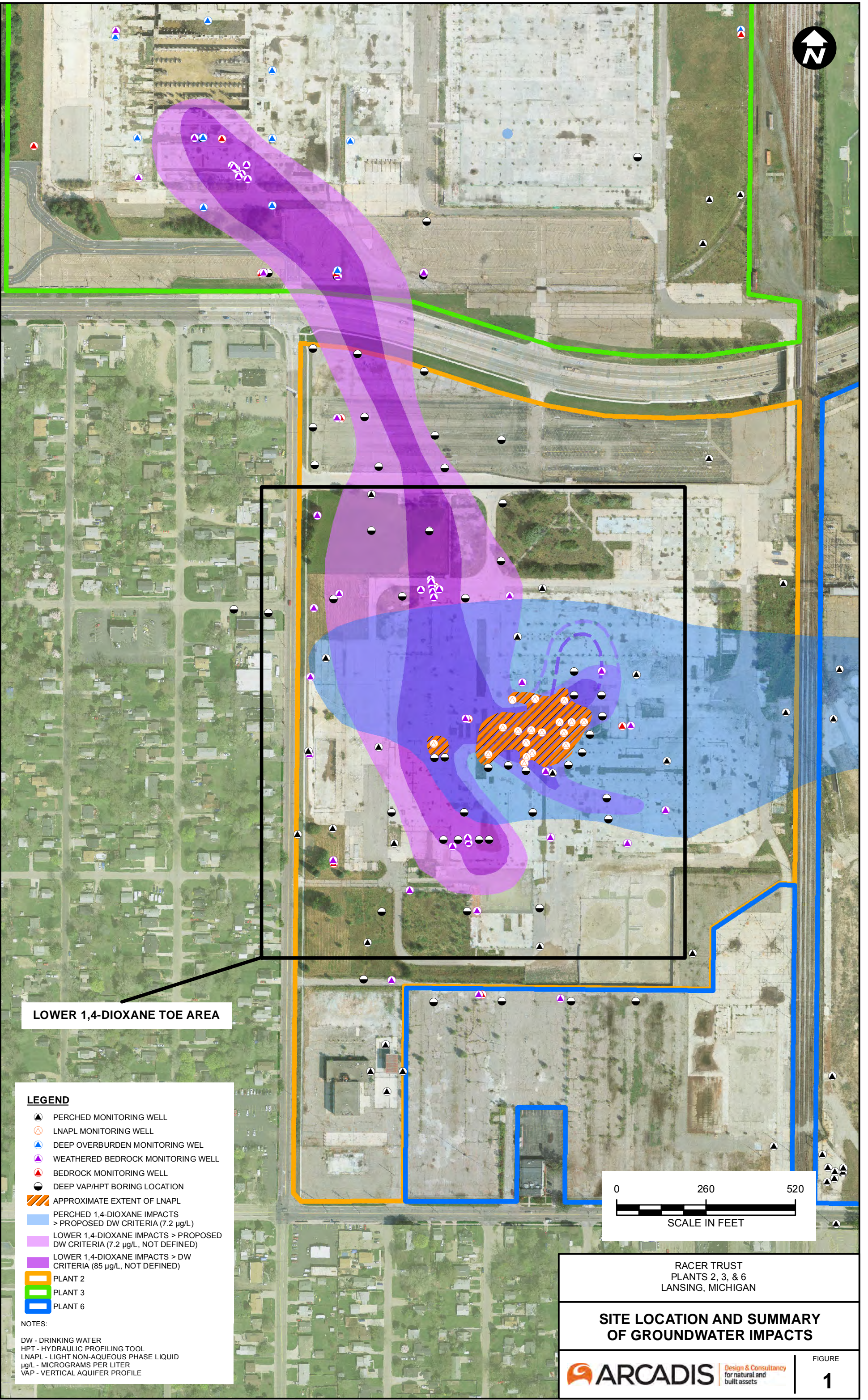
Location ID: Date Collected: Sample Name:	MI GW (DEQ2013) RES DW ^(a)	MI GW (DEQ2013) GSI	Units	MW-16-80 06/28/16 MW-16-80 (062816)	MW-16-81 06/28/16 MW-16-81 (062816)	MW-16-82 06/28/16 MW-16-82 (062816)	MW-16-83 06/28/16 MW-16-83 (062816)
Volatile Organics							
1,2-Dibromo-3-chloropropane (DBCP)	0.2	--	ug/L	<1	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	0.05	5.7	ug/L	<1	<1	<1	<1
1,2-Dichlorobenzene	600	13	ug/L	<1	<1	<1	<1
1,4-Dichlorobenzene	75	17	ug/L	<1	<1	<1	<1
1,4-Dioxane	85	2,800	ug/L	<3	100 ^a	<3	<3
1,1,1-Trichloroethane	200	89	ug/L	<1	<1	<1	<1
2-Hexanone	1,000	--	ug/L	<10	<10	<10	<10
1,1,2,2-Tetrachloroethane	8.5	78	ug/L	<1	<1	<1	<1
Acetone	730	1,700	ug/L	<10	<10	<10	<10
1,1,2-Trichloroethane	5	330	ug/L	<1	<1	<1	<1
Bromodichloromethane	80	--	ug/L	<1	<1	<1	<1
1,1-Dichloroethane	880	740	ug/L	<1	<1	<1	<1
Bromoform	80	--	ug/L	<1	<1	<1	<1
1,1-Dichloroethene	7	130	ug/L	<1	<1	<1	<1
Bromomethane (Methyl bromide)	10	35	ug/L	<1	<1	<1	<1
1,2-Dichloroethane	5	360	ug/L	<1	<1	<1	<1
Carbon disulfide	800	--	ug/L	<1	<1	<1	<1
Carbon tetrachloride	5	45	ug/L	<1	<1	<1	<1
cis-1,2-Dichloroethene	70	620	ug/L	<1	<1	<1	<1
Chlorobenzene	100	25	ug/L	<1	<1	<1	<1
trans-1,2-Dichloroethene	100	1,500	ug/L	<1	<1	<1	<1
Chloroform (Trichloromethane)	80	350	ug/L	<1	<1	<1	<1
Trichloroethene	5	200	ug/L	<1	<1	<1	<1
Chloromethane (Methyl chloride)	260	--	ug/L	<1	<1	<1	<1
Tetrachloroethene	5	60	ug/L	<1	<1	<1	<1
cis-1,3-Dichloropropene	--	--	ug/L	<1	<1	<1	<1
Vinyl chloride	2	13	ug/L	<1	<1	<1	<1
Chloroethane	430	1,100	ug/L	<1	<1	<1	<1
Dichlorodifluoromethane (CFC-12)	1,700	--	ug/L	<1	<1	<1	<1
Benzene	5	200	ug/L	<1	<1	<1	<1
Methyl acetate	--	--	ug/L	<10	<10	<10	<10
Ethylbenzene	74	18	ug/L	<1	<1	<1	<1
Methylene chloride	5	1,500	ug/L	<1	<1	<1	<1
Styrene	100	80	ug/L	<1	<1	<1	<1
Toluene	790	270	ug/L	5	3	2	7
trans-1,3-Dichloropropene	--	--	ug/L	<1	<1	<1	<1
Methyl tert butyl ether (MTBE)	40	7,100	ug/L	<1	<1	<1	<1
Trichlorofluoromethane (CFC-11)	2,600	--	ug/L	<1	<1	<1	<1
Trifluorotrchloroethane (Freon 113)	170,000	32	ug/L	<1	<1	<1	<1
2-Butanone (Methyl ethyl ketone) (MEK)	13,000	2,200	ug/L	<10	<10	<10	<10
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	1,800	--	ug/L	<10	<10	<10	<10
1,2,4-Trichlorobenzene	70	99	ug/L	<1	<1	<1	<1
1,2-Dichloropropane	5	230	ug/L	<1	<1	<1	<1
1,3-Dichlorobenzene	6.6	28	ug/L	<1	<1	<1	<1
Cyclohexane	--	--	ug/L	<1	<1	<1	<1
Methyl cyclohexane	--	--	ug/L	<1	<1	<1	<1
Dibromochloromethane	80	--	ug/L	<1	<1	<1	<1
Isopropyl benzene	800	28	ug/L	<1	<1	<1	<1
o-Xylene	--	--	ug/L	<1	<1	<1	<1
m&p-Xylene	--	--	ug/L	<2	<2	<2	<2

Notes:

- Shading indicates result exceeding one or more MDEQ Part 201 Generic Cleanup Criteria and Screening Levels.
- Data shown in [] represent duplicate sample analytical results.
- = Not listed in the MDEQ Criteria Tables.
- ^a - Sample exceeds Residential Drinking Water Criteria.
- < = less than
- ug/L = micrograms per liter
- USEPA = United States Environmental Protection Agency

FIGURES





LOWER 1,4-DIOXANE TOE AREA

LEGEND

- ▲ PERCHED MONITORING WELL
- LNAPL MONITORING WELL
- ▲ DEEP OVERBURDEN MONITORING WELL
- ▲ WEATHERED BEDROCK MONITORING WELL
- ▲ BEDROCK MONITORING WELL
- DEEP VAP/HPT BORING LOCATION
- ▨ APPROXIMATE EXTENT OF LNAPL
- PERCHED 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (7.2 µg/L)
- LOWER 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (7.2 µg/L, NOT DEFINED)
- LOWER 1,4-DIOXANE IMPACTS > DW CRITERIA (85 µg/L, NOT DEFINED)
- PLANT 2
- PLANT 3
- PLANT 6

NOTES:

DW - DRINKING WATER
 HPT - HYDRAULIC PROFILING TOOL
 LNAPL - LIGHT NON-AQUEOUS PHASE LIQUID
 µg/L - MICROGRAMS PER LITER
 VAP - VERTICAL AQUIFER PROFILE



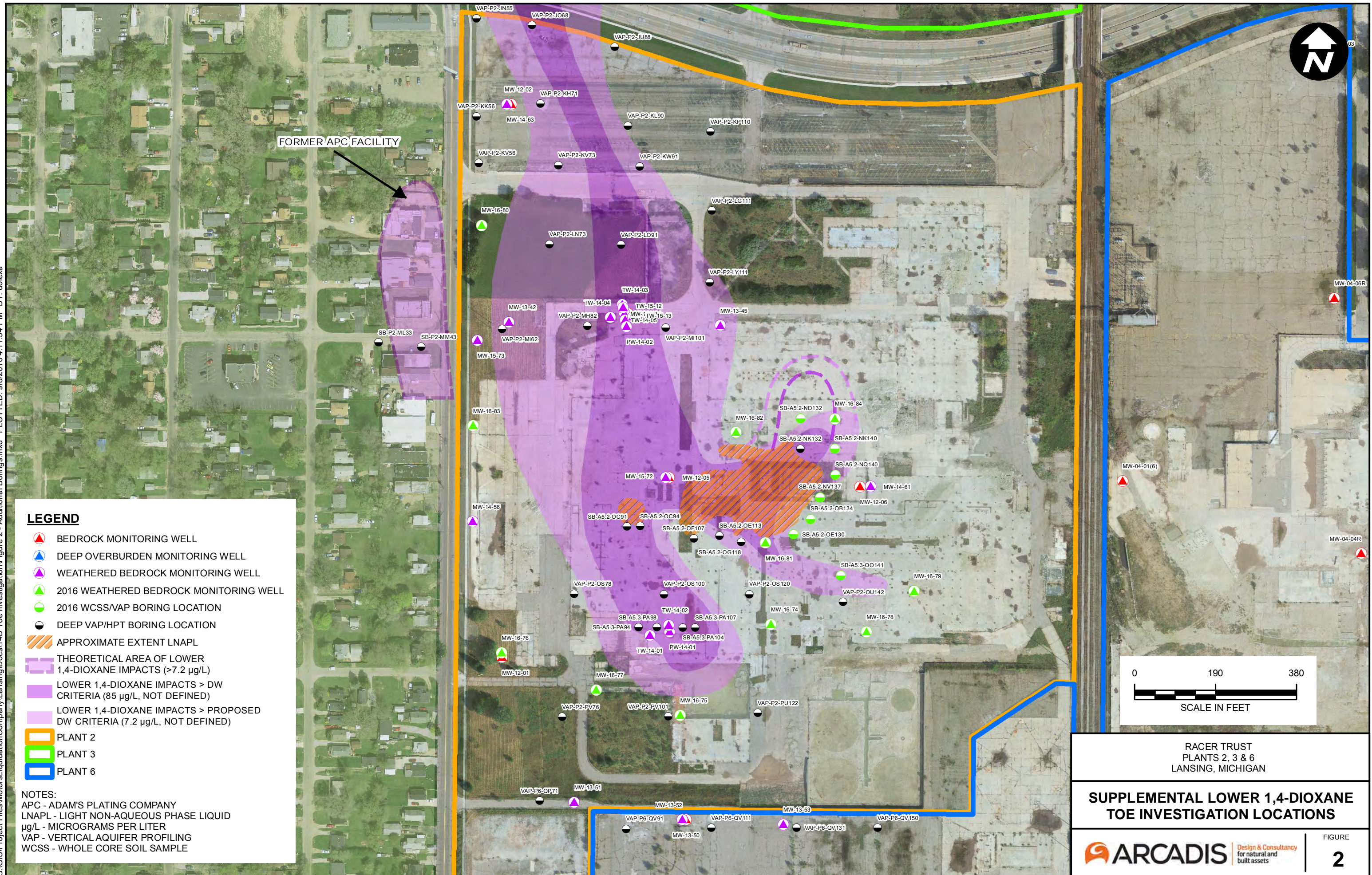
RACER TRUST
 PLANTS 2, 3, & 6
 LANSING, MICHIGAN

SITE LOCATION AND SUMMARY OF GROUNDWATER IMPACTS



FIGURE

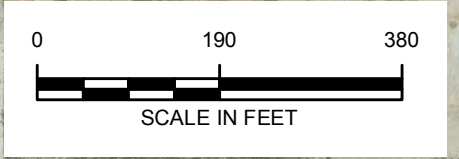
1



LEGEND

- BEDROCK MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- 2016 WEATHERED BEDROCK MONITORING WELL
- 2016 WCSS/VAP BORING LOCATION
- DEEP VAP/HPT BORING LOCATION
- APPROXIMATE EXTENT LNAPL
- THEORETICAL AREA OF LOWER 1,4-DIOXANE IMPACTS (>7.2 µg/L)
- LOWER 1,4-DIOXANE IMPACTS > DW CRITERIA (85 µg/L, NOT DEFINED)
- LOWER 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (7.2 µg/L, NOT DEFINED)
- PLANT 2
- PLANT 3
- PLANT 6

NOTES:
 APC - ADAM'S PLATING COMPANY
 LNAPL - LIGHT NON-AQUEOUS PHASE LIQUID
 µg/L - MICROGRAMS PER LITER
 VAP - VERTICAL AQUIFER PROFILING
 WCSS - WHOLE CORE SOIL SAMPLE

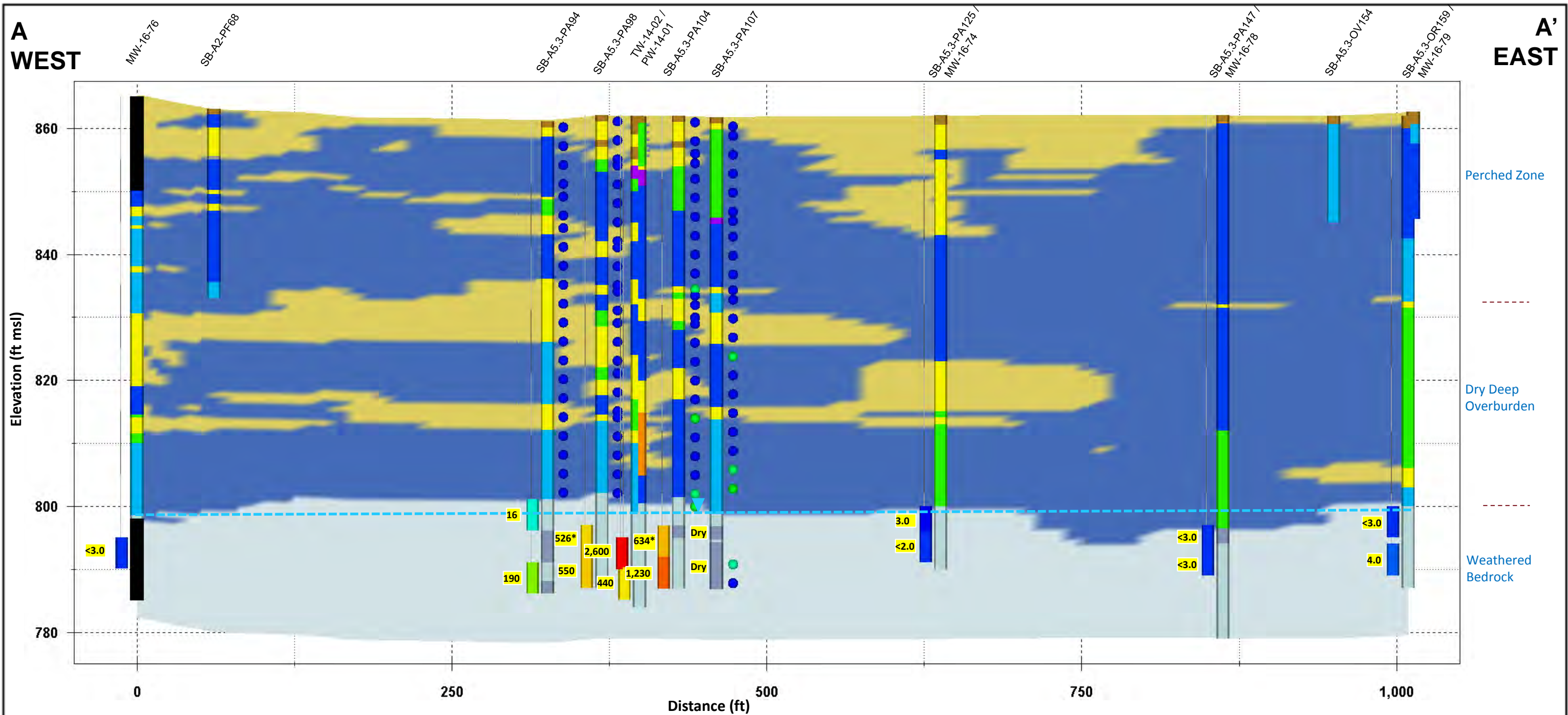


RACER TRUST
 PLANTS 2, 3 & 6
 LANSING, MICHIGAN

**SUPPLEMENTAL LOWER 1,4-DIOXANE
 TOE INVESTIGATION LOCATIONS**

ARCADIS Design & Consultancy
 for natural and built assets

FIGURE
2



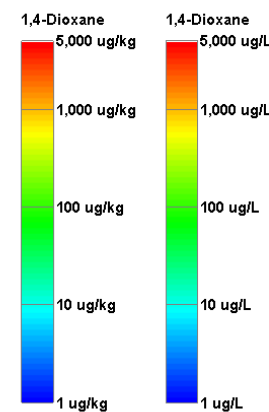
LEGEND

STRATIGRAPHY

- TOPSOIL/ASPHALT/CONCRETE
- FILL
- GRAVELLY SAND
- SAND
- SILTY SAND
- SILTY/SANDY/GRAVELLY CLAY
- CLAY
- PEAT
- BEDROCK (PRIMARILY SANDSTONE)
- BEDROCK (PRIMARILY SHALE)
- NO RECOVERY

HYDROSTRATIGRAPHY

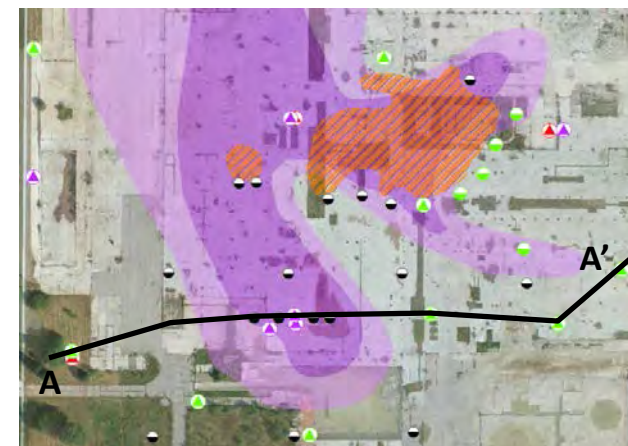
- More Permeable
- Less Permeable
- Bedrock
- Approximate Bedrock Water Table
- Soil Sample Result
- Groundwater Sample Result



NOTE:

1. Soil and groundwater concentrations provided in parts per billion
 - $\mu\text{g/L}$ – micrograms per liter
 - $\mu\text{g/kg}$ – micrograms per kilogram
2. Monitoring well results provided by GC-MS Method 8260 and represent most recent sampling event (June 2016)
3. VAP samples analyzed via GC-MS Method 8260 unless otherwise noted.
4. * - VAP sample analyzed via DSITMS Method 8265
5. Soil samples are provided by DSITMS Method 8265 or GC-MS Method 8260C. Results bias low. Results could potentially be two to four times higher if analyzed using standard Method 8260-SIM.

VAP – Vertical aquifer profiling
 DSITMS – Direct ion trap mass spectrometry
 GC-MS – Gas chromatography-mass spectrometry
 ft msl – feet above mean sea level



RACER LANSING
PLANT 2
LANSING, MICHIGAN

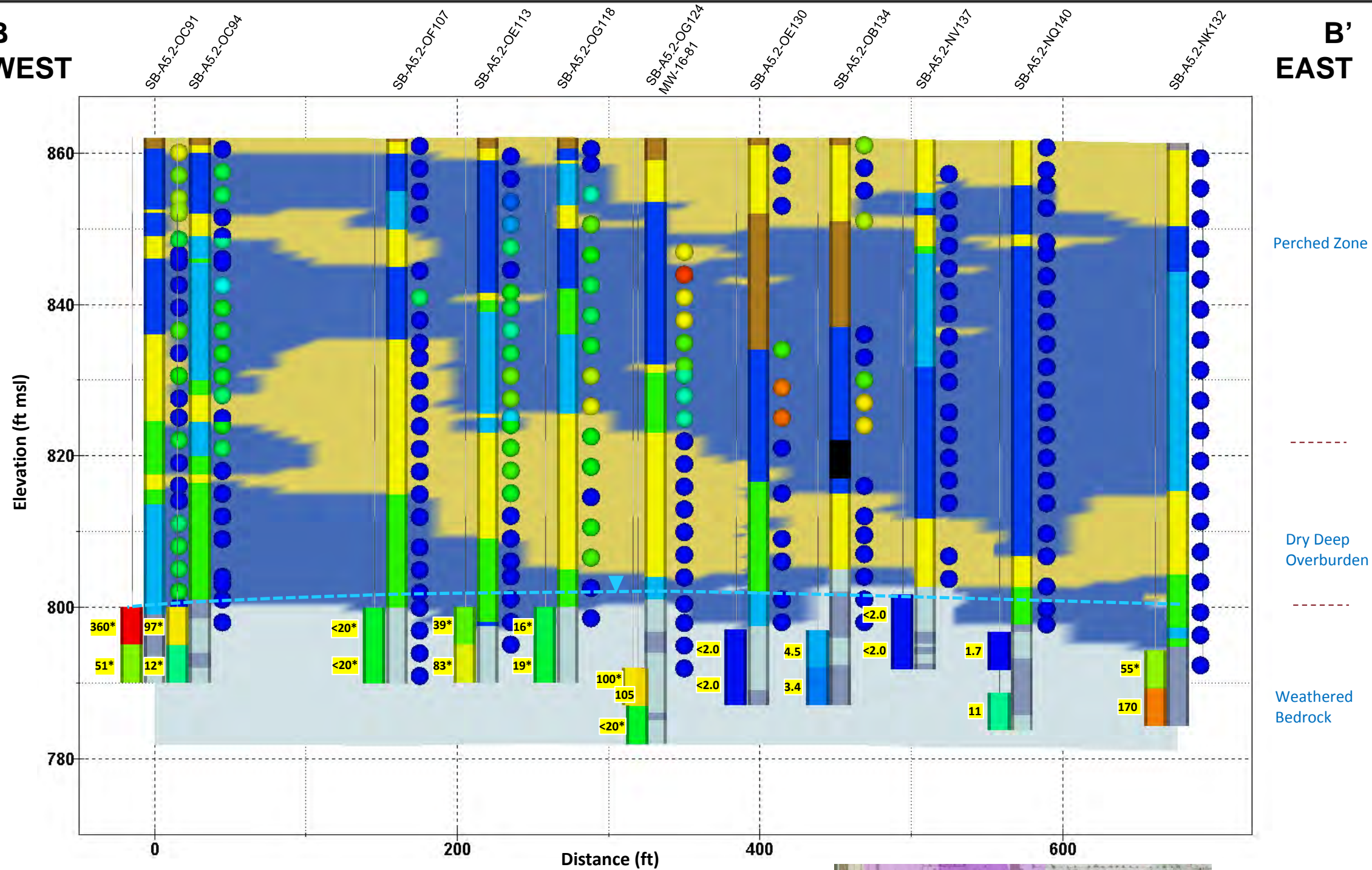
CROSS SECTION A-A'

ARCADIS Design & Consultancy
for natural and built assets

FIGURE
3

B
WEST

B'
EAST

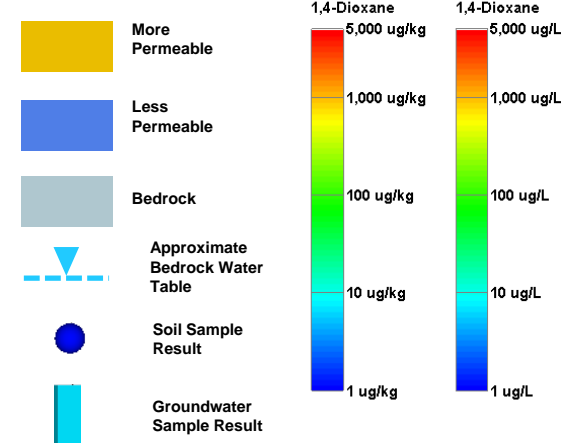


LEGEND

STRATIGRAPHY

- TOPSOIL/ASPHALT/CONCRETE
- FILL
- GRAVELLY SAND
- SAND
- SILTY SAND
- SILTY/SANDY/GRAVELLY CLAY
- CLAY
- PEAT
- BEDROCK (PRIMARILY SANDSTONE)
- BEDROCK (PRIMARILY SHALE)
- NO RECOVERY

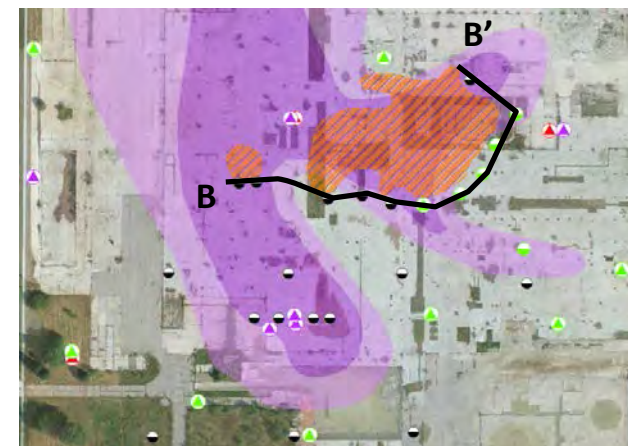
HYDROSTRATIGRAPHY



NOTE:

1. Soil and groundwater concentrations provided in parts per billion
 - $\mu\text{g/L}$ – micrograms per liter
 - $\mu\text{g/kg}$ – micrograms per kilogram
2. Monitoring well results provided by GC-MS Method 8260 and represent most recent sampling event (June 2016)
3. VAP samples analyzed via GC-MS Method 8260 unless otherwise noted.
4. * - VAP sample analyzed via DSITMS Method 8265
5. Soil samples are provided by DSITMS Method 8265 or GC-MS Method 8260C. Results bias low. Results could potentially be two to four times higher if analyzed using standard Method 8260-SIM.

VAP – Vertical aquifer profiling
 DSITMS – Direct ion trap mass spectrometry
 GC-MS – Gas chromatography-mass spectrometry
 ft msl – feet above mean sea level



RACER LANSING
PLANT 2
LANSING, MICHIGAN

CROSS SECTION B-B'

ARCADIS Design & Consultancy
for natural and built assets

FIGURE
4

FORMER APC FACILITY



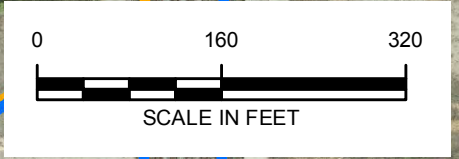
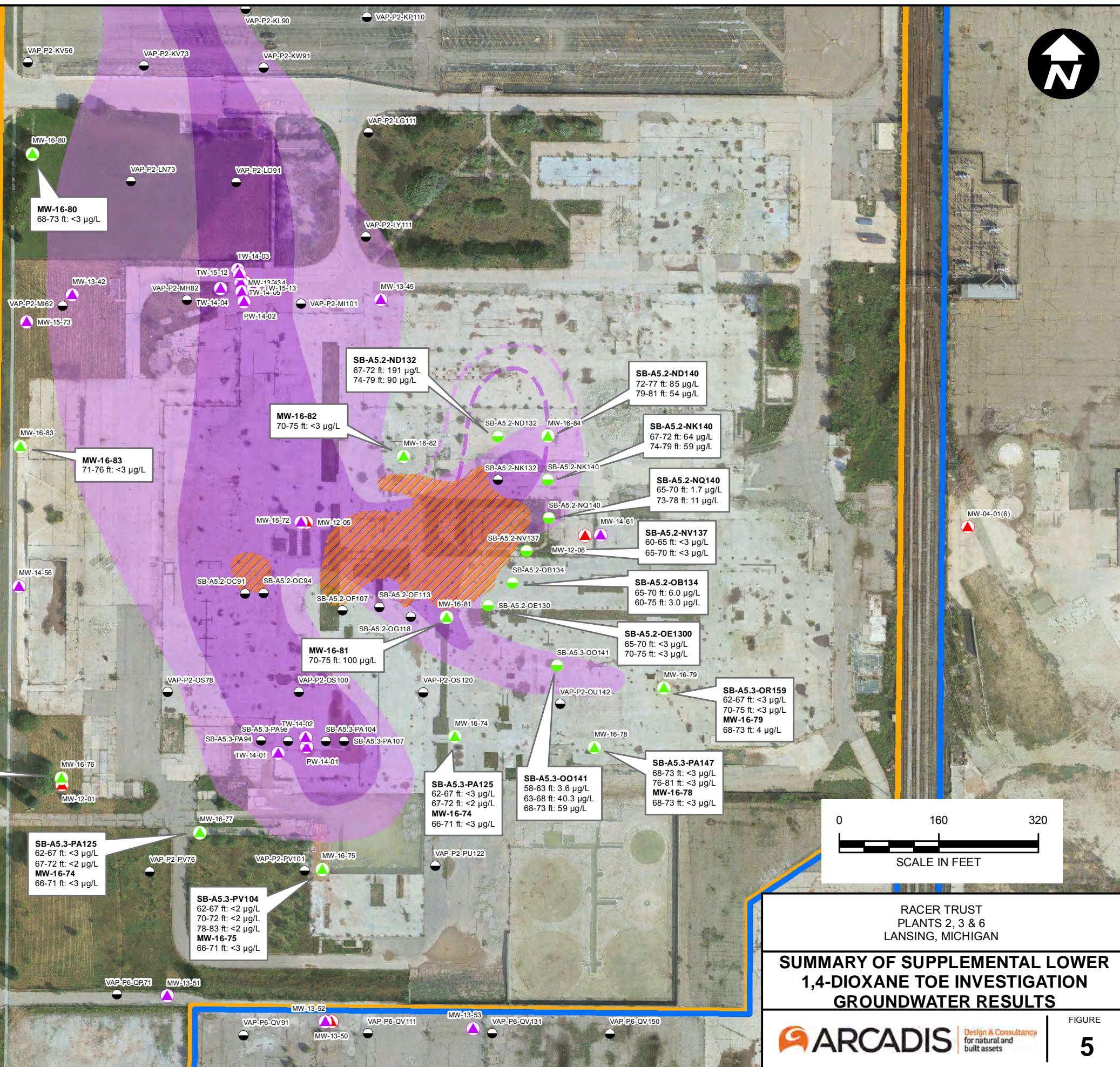
LEGEND

- BEDROCK MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- 2016 WEATHERED BEDROCK MONITORING WELL
- 2016 WCSS/VAP BORING LOCATION
- DEEP VAP/HPT BORING LOCATION
- APPROXIMATE EXTENT LNAPL
- THEORETICAL AREA OF LOWER 1,4-DIOXANE IMPACTS (>7.2 µg/L)
- LOWER 1,4-DIOXANE IMPACTS > DW CRITERIA (85 µg/L, NOT DEFINED)
- LOWER 1,4-DIOXANE IMPACTS > PROPOSED DW CRITERIA (7.2 µg/L, NOT DEFINED)
- PLANT 2
- PLANT 3
- PLANT 6

NOTES:
 WHERE ANALYTICAL RESULTS ARE AVAILABLE FROM BOTH MOBILE AND FIXED LABORATORIES, THE FIXED LABORATORY DATA IS PREFERENTIALLY SHOWN. PLEASE REFER TO TABLES 2 AND 3 FOR FULL ANALYTICAL RESULTS.

SAMPLE NAMES BEGINNING WITH SB ARE PROFILE SAMPLES. SAMPLE NAMES BEGINNING WITH MW ARE PERMANENT WELLS.

APC - ADAM'S PLATING COMPANY
 HPT - HYDRAULIC PROFILING TOOL
 LNAPL - LIGHT NON-AQUEOUS PHASE LIQUID
 µg/L - MICROGRAMS PER LITER
 VAP - VERTICAL AQUIFER PROFILING



RACER TRUST
 PLANTS 2, 3 & 6
 LANSING, MICHIGAN

**SUMMARY OF SUPPLEMENTAL LOWER
 1,4-DIOXANE TOE INVESTIGATION
 GROUNDWATER RESULTS**

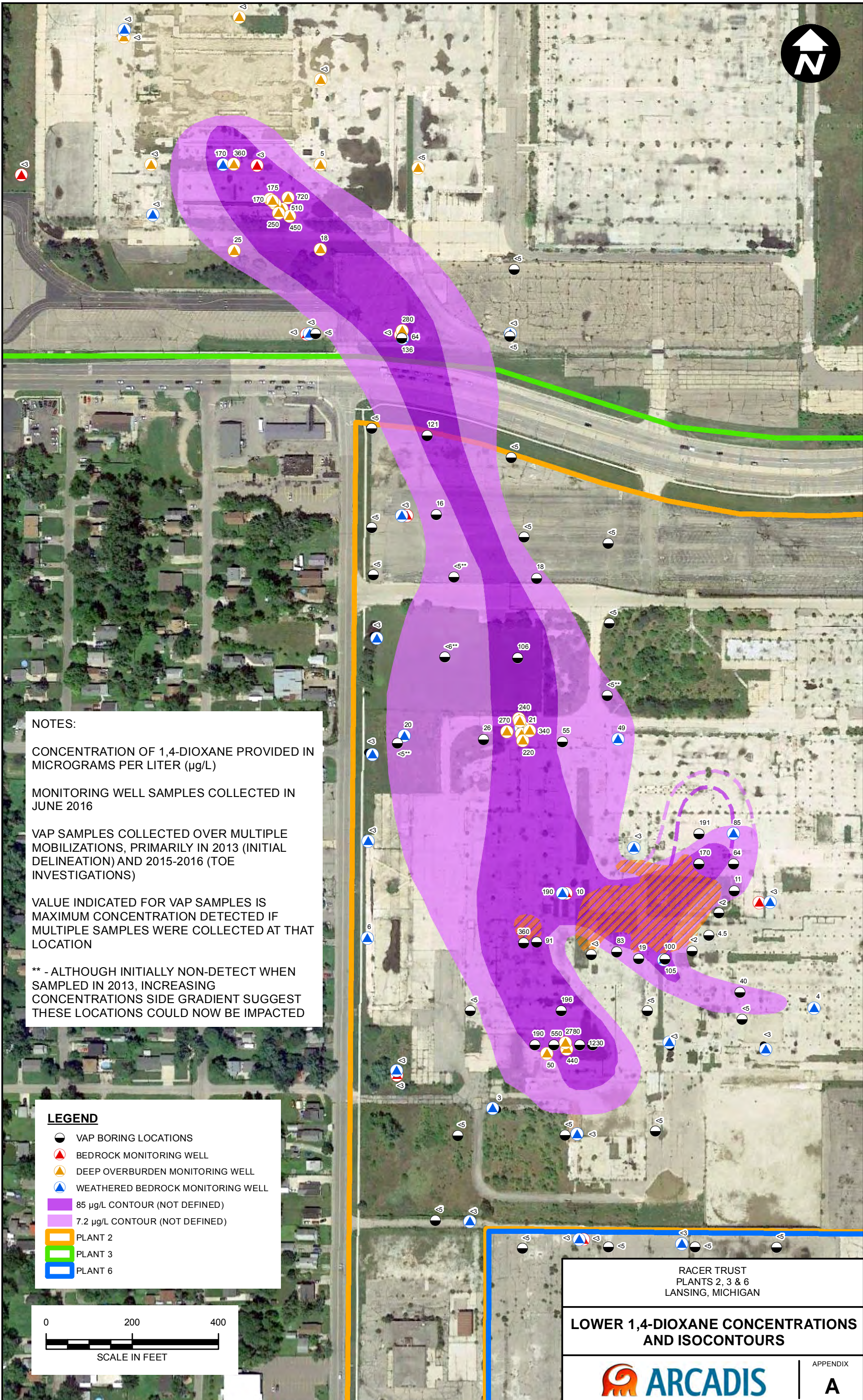
Design & Consultancy
 for natural and built assets

FIGURE
5

APPENDIX A

Basis for Revised Lower 1,4-Dioxane Plume Footprint





NOTES:

CONCENTRATION OF 1,4-DIOXANE PROVIDED IN MICROGRAMS PER LITER (µg/L)

MONITORING WELL SAMPLES COLLECTED IN JUNE 2016

VAP SAMPLES COLLECTED OVER MULTIPLE MOBILIZATIONS, PRIMARILY IN 2013 (INITIAL DELINEATION) AND 2015-2016 (TOE INVESTIGATIONS)

VALUE INDICATED FOR VAP SAMPLES IS MAXIMUM CONCENTRATION DETECTED IF MULTIPLE SAMPLES WERE COLLECTED AT THAT LOCATION

** - ALTHOUGH INITIALLY NON-DETECT WHEN SAMPLED IN 2013, INCREASING CONCENTRATIONS SIDE GRADIENT SUGGEST THESE LOCATIONS COULD NOW BE IMPACTED

- LEGEND**
- VAP BORING LOCATIONS
 - ▲ BEDROCK MONITORING WELL
 - ▲ DEEP OVERBURDEN MONITORING WELL
 - ▲ WEATHERED BEDROCK MONITORING WELL
 - 85 µg/L CONTOUR (NOT DEFINED)
 - 7.2 µg/L CONTOUR (NOT DEFINED)
 - PLANT 2
 - PLANT 3
 - PLANT 6



RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

LOWER 1,4-DIOXANE CONCENTRATIONS AND ISOCONTOURS



CITY: KNOXVILLE DIV: ENV DB: A. SMITH PIC: PM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
G:\GIS\Project Files\MotorsLiquidation\Company\Lansing\Docs\working\14-Dioxane Isocontour Maps.mxd PLOTTED: 9/15/2016 11:47:12 AM BY: dotexa

APPENDIX B

Boring Logs



Date Start: 06/14/2016
Date Finish: 06/14/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA

Borehole Depth (ft. bgs.): 80.0
Surface Elevation:

Descriptions By: Kaitlyn Voet

Well/Boring ID: MW-16-76
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 60-80 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0							(0.0 - 15.0') NO RECOVERY		
10	-10	1	0.0-20.0'	5.0	NA					
15	-15				0.1		(15.0 - 17.5') CLAY, medium plasticity, no dilatancy, little silt, trace fine sand; medium stiff; moist; brown (10YR 4/3).			
					0.1		(17.5 - 18.5') SAND, medium to coarse, little granules to small pebbles, round; well sorted; moist; dark yellowish brown (10YR 3/6).			
					0.1		(18.5 - 19.0') SAND, fine, trace silt; well sorted; moist; brown (10YR 4/3).			
20	-20				0.1		(19.0 - 20.5') CLAY and SILT, medium plasticity, slow dilatancy, little fine sand, trace granules; medium stiff; moist to dry; dark gray (10YR 4/1).			
					0.1		(20.5 - 21.0') SAND, medium; well sorted; wet; gray (10YR 5/1) to yellowish brown (10YR 5/6).			
					0.1		(21.0 - 27.0') CLAY and SILT, medium plasticity, no dilatancy, trace fine sand; medium stiff to stiff; moist; dark gray (10YR 4/1).			
25	-25	2	20.0-30.0'	5.0	0.2					

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/14/2016 Date Finish: 06/14/2016 Drilling Company: Cascade Driller's Name: D. Gordon Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: Easting: Casing Elevation: NA Borehole Depth (ft. bgs.): 80.0 Surface Elevation: Descriptions By: Kaitlyn Voet	Well/Boring ID: MW-16-76 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 60-80 F, Sunny
--	---	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
30	-30	3	30.0-35.0'	5.0	0.1		(27.0 - 28.0') SAND, fine to medium; trace silt; well sorted; moist; dark yellowish brown (10YR 4/6).			
					0.1		(28.0 - 31.0') CLAY and SILT, low plasticity, slow dilatancy, trace very fine sand; soft; moist; yellowish brown (10YR 5/4). NOTE: trace granules, subangular from 30 to 31' bgs.			
					0.1		(31.0 - 34.5') CLAY and SILT, medium plasticity, no dilatancy, some medium sand, trace fine sand, trace granules to small pebbles, subangular; dark gray (10YR 4/1).			
					0.0					
35	-35	4	35.0-40.0'	5.0	0.1		(34.5 - 46.0') SAND, fine to medium, little silt, trace clay well sorted; moist; dark grayish brown (10YR 4/2).			
					0.1					
					0.2					
40	-40	5	40.0-45.0'	2.5	0.3					
					0.2					
					0.1					
45	-45	6	45.0-50.0'	5.0	0.1		(46.0 - 50.5') CLAY, medium plasticity, no dilatancy, trace silt, trace fine sand to granules, subangular to subround; moist; soft; dark gray (10YR 4/1).			
					0.1					
50	-50	7	50.0-55.0'	5.0	0.2		(50.5 - 51.0') SILT and SAND, fine, trace granules; well sorted; moist; dark gray (10YR 4/1).			
					0.2		(51.0 - 53.5') SAND, medium to coarse, subangular to subround; well sorted; moist; grayish brown (10YR 5/2).			
					0.2		(53.5 - 55.0') SILT, low plasticity, no dilatancy, little clay, trace fine sand, trace granules to medium pebbles, subround; moist; dense; dark gray (10YR 4/1).			
55	-55				0.1		(55.0 - 66.5') CLAY, low to nonplastic, and SAND, fine, little silt; medium stiff; moist; dark gray (10YR 4/1).			

2" PVC well casing (-3-70' bgs)

Bentonite (0-67' bgs)

Remarks: bgs = below ground surface
No odor or staining observed



Date Start: 06/14/2016
Date Finish: 06/14/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotasonic
Sampling Method: 4X6 Casing
Rig Type: Rotasonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA

Borehole Depth (ft. bgs.): 80.0
Surface Elevation:

Descriptions By: Kaitlyn Voet

Well/Boring ID: MW-16-76
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 60-80 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
60	-60	8	55.0-60.0'	5.0	0.1					
					0.1			NOTE: Large cobbles, subround at 60' bgs.		Bentonite (0-67' bgs)
65	-65	9	60.0-65.0'	5.0	0.1					
					0.1			NOTE: Little granules to small pebbles, subangular from 65 to 66.5' bgs.		
		10	65.0-67.0'	2.0				(66.5 - 67.0') SANDSTONE and SHALE, interbedded, predominantly shale; gray (10YR 5/1).		Choker Sand (67-68' bgs)
					0.6			(67.0 - 80.0') NO RECOVERY, drill stuck, tried to loosen with water, washed sample away.		
70	-70				NA					
					NA					
		11	67.0-80.0'	0.0	NA					Filter Pack (68-80' bgs) 2" stainless steel, 10 slot well screen (70-75' bgs)
75	-75				NA					
					NA					
					NA					
80	-80							End of boring at 80' bgs.		
85	-85									

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/16/2016
Date Finish: 06/16/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotasonic
Sampling Method: 4X6 Casing
Rig Type: Rotasonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA

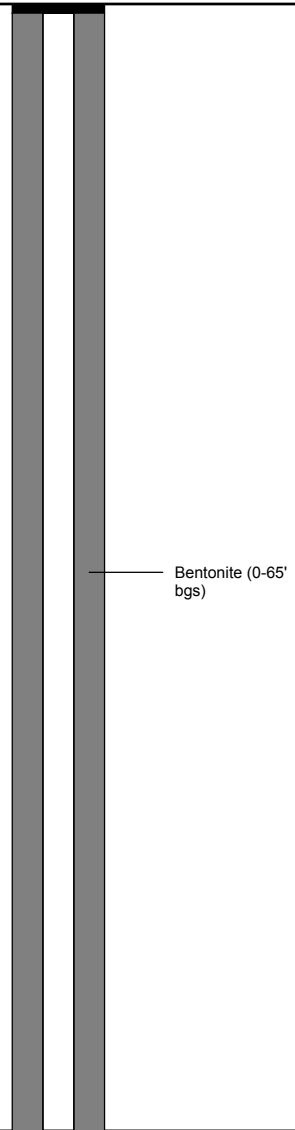
Borehole Depth (ft. bgs.): 73.0
Surface Elevation:

Descriptions By: Kaitlyn Voet

Well/Boring ID: MW-16-80
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0							(0.0 - 1.0') TOPSOIL		
					2.6			(1.0 - 2.0') CLAY, medium plasticity, no dilatancy; soft; moist; brown (10YR 4/3).		
					2.2			(2.0 - 5.0') SAND, fine to medium, trace silt, trace granules to medium pebbles, subround; well sorted; moist; brown (10YR 5/3).		
5	-5	1	0.0-10.0'	6.0	0.1			(5.0 - 11.0') CLAY, medium to high plasticity, slow dilatancy, trace very fine sand; moist; medium stiff to soft; dark gray (10YR 4/1).		
					0.0					
					0.2			NOTE: Little sand, fine to medium from 10' to 11' bgs.		
10	-10				0.5			(11.0 - 17.0') CLAY and SILT, medium to low plasticity, no dilatancy, trace granules to medium pebbles, subround to subangular; moist, medium stiff; dark gray (10YR 4/1).		
					0.2					
15	-15	2	10.0-20.0'	NA	0.1					
					0.1			(17.0 - 21.0') SAND, fine to medium, little granules to small pebbles, trace silt; well sorted; moist; dark gray (10YR 4/1).		
					0.1					
20	-20				0.1			(21.0 - 42.0') CLAY and SILT, medium to high plasticity, no dilatancy, trace fine sand, trace granules to medium cobbles, subround to round; moist; medium stiff to soft; dark gray (10YR 4/1).		
					0.1					
25	-25									



Remarks: bgs = below ground surface
 No odor or staining observed




Date Start: 06/16/2016 Date Finish: 06/16/2016 Drilling Company: Cascade Driller's Name: D. Gordon Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: Eastings: Casing Elevation: NA Borehole Depth (ft. bgs.): 73.0 Surface Elevation: Descriptions By: Kaitlyn Voet	Well/Boring ID: MW-16-80 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 70 F, Cloudy
--	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
28.0	-30.0	3	20.0-30.0'	7.5	0.1					
30.0	-30.0				0.1					
35.0	-35.0	4	30.0-40.0'	5.0	0.1					
40.0	-40.0				0.1					
42.0	-42.0				0.2			(42.0 - 45.5') CLAY, low plasticity, no dilatancy, little silt, trace very fine sand, trace granules to small pebbles, subround to subangular; moist; medium stiff to stiff; dark gray (10YR 4/1).		
45.0	-45.0	5	40.0-50.0'	10.0	0.2			(45.5 - 51.0') SAND, very fine to medium, trace granules to small pebbles, subround to subangular, trace silt; well sorted; moist; grayish brown (10YR 5/2).		
50.0	-50.0				0.6					
51.0	-51.0				0.2			(51.0 - 60.0') CLAY, high plasticity, no dilatancy, some fine sand; soft; moist; dark gray (10YR 4/1).		

2" PVC well casing (0-68' bgs)


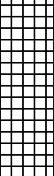
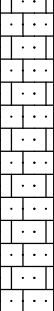
Bentonite (0-65' bgs)

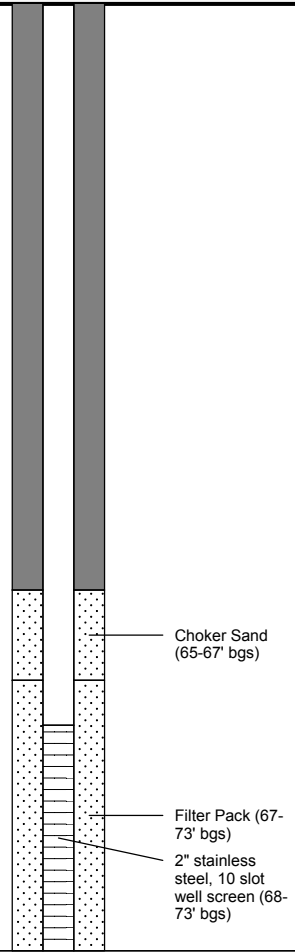
 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No odor or staining observed
--	--

Date Start: 06/16/2016
Date Finish: 06/16/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotasonic
Sampling Method: 4X6 Casing
Rig Type: Rotasonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA
Borehole Depth (ft. bgs.): 73.0
Surface Elevation:
Descriptions By: Kaitlyn Voet

Well/Boring ID: MW-16-80
Client: RACER
Location: RACER Lansing Plant 2
Weather Conditions: 70 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55	6	50.0-60.0'	3.5	0.2					
60	-60	7	60.0-65.0'	5.0	0.2			(60.0 - 64.0') CLAY and SILT, low plasticity, no dilatancy, trace very fine sand; medium stiff to soft; moist; very dark gray (10YR 3/1).		
65	-65	8	65.0-71.0'	3.0	0.2			(64.0 - 71.0') SANDSTONE, fine grained, heavily weathered; gray (10YR 5/1).		
70	-70	9	71.0-73.0'	0.0	NA			(71.0 - 73.0') NO RECOVERY.		
75	-75							End of boring at 73' bgs.		



Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/14/2016
Date Finish: 06/14/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA


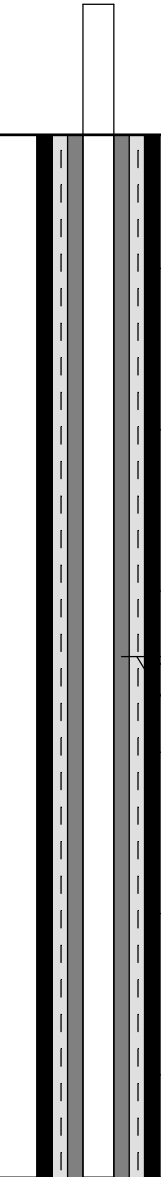


Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: Alex Villhauer

Well/Boring ID: MW-16-81
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 64 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
		1	0.0-3.0'	NA	NA			(0.0 - 3.0') CONCRETE		 <p> Bentonite (0-67' bgs) 7" dia steel casing to 37' bgs Cement (0-37' bgs) </p>
		2	3.0-7.0'	4.0	0.4			(3.0 - 8.5') SAND, fine to coarse, little granules to large pebbles, subround; poorly sorted; moist; loose; dark brown (10YR 3/3). NOTE: Black staining throughout.		
					0.3			(8.5 - 30.0') CLAY, medium plasticity, some silt, trace fine sand, trace granules to medium pebble, subangular to subround; moist; stiff; dark grayish brown (10YR 4/2).		
		3	7.0-17.0'	10.0	0.3					
		4	17.0-27.0'	10.0	0.0			NOTE: Thin (1 cm) fine to medium sand seam; well sorted; saturated at 23.5' bgs.		

Remarks: bgs = below ground surface
 No odor observed



Date Start: 06/14/2016
Date Finish: 06/14/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: Alex Villhauer

Well/Boring ID: MW-16-81
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 64 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
25	-25				0.0					
30	-30	5	27.0-37.0'	NA	0.0			(30.0 - 31.0') SAND, fine; well sorted; moist; brown (10YR 5/3).		<p> 7" die steel casing to 37' bgs Cement (0-37' bgs) 2" PVC well casing (-3-70' bgs) Bentonite (0-67' bgs) </p>
					0.0			(31.0 - 34.0') SILT, low plasticity to nonplastic, no dilatancy, little clay, trace granules, subround; moist; dark grayish brown (10YR 4/2).		
35	-35				0.0			(34.0 - 39.0') SILT, low plasticity, little clay, little fine sand, trace granules to medium pebble, subangular to angular; moist, very dense; dark gray (10YR 4/1). NOTE: Till.		
40	-40	6	37.0-47.0'	8.5	0.0			(39.0 - 58.0') SAND, fine, trace small to medium pebble, subround; well sorted; moist; loose; brown (10YR 5/3).		
45	-45				0.0					
50	-50				0.0					

Remarks: bgs = below ground surface
 No odor observed



Date Start: 06/14/2016
Date Finish: 06/14/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 77.0
Surface Elevation: NA

Descriptions By: Alex Villhauer

Well/Boring ID: MW-16-81
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 64 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55 - 55	-55	7	47.0-57.0'	8.0	0.0					
60 - 60	-60				0.0			(58.0 - 61.0') CLAY and SILT, low plasticity, little fine sand, little granules to large pebble, subangular; moist; stiff; dark grayish brown (10YR 4/2). NOTE: Till.		Bentonite (0-67' bgs)
65 - 65	-65	8	57.0-67.0'	7.8	NA			(61.0 - 62.5') SANDSTONE, very fine, heavily weathered; moist; gray (10YR 5/1).		
					NA			(62.5 - 65.5') SANDSTONE and SHALE, interbedded, wathered; moist; dark gray (10YR 4/1).		
					NA			(65.5 - 68.0') SHALE, weathered, very dark gray (10YR 3/1).		
70 - 70	-70				NA			(68.0 - 76.0') SANDSTONE, very fine, wathered; gray (10YR 5/1). NOTE: Small shale seams present.		Choker Sand (67-68' bgs)
		9	67.0-77.0	5.0	NA					Filter Pack (68-77' bgs)
					NA					2" stainless steel, 10 slot well screen (70-75' bgs)
75 - 75	-75				NA			(76.0 - 77.0') SHALE, weathered; very dark gray (10YR 3/1).		
80 - 80	-80							End of boring at 77' bgs.		


Remarks: bgs = below ground surface
 No odor observed



Date Start: 06/15/2016 Date Finish: 06/16/2016 Drilling Company: Cascade Driller's Name: Scott Parkes Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 76.0 Surface Elevation: NA Descriptions By: Alex Villhauer	Well/Boring ID: MW-16-82 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 70 F, Rain
---	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
1.5		1	0.0-7.0'	7.0				(0.0 - 1.5') CONCRETE, pulverized. NOTE: Red staining; strong odor.		
9.6								(1.5 - 7.0') CLAY, low plasticity, some fine to coarse sand, subround, some fly ash, little granule to small pebbles, subangular; moist; soft; dark brown (10YR 3/3) to dark gray (10YR 4/1). NOTE: Mottled; fill.		
10.6										
4.5										
9.4										
0.9										
0.9										
0.9								(7.0 - 15.0') CLAY, medium plasticity, little silt, trace fine sand, trace granules to small pebbles, subangular; moist; medium stiff; brown (10YR 4/3).		
0.5										
0.9										
0.3										
0.2		2	7.0-17.0'	8.5						
0.0										
0.0										
0.0										
0.2								(15.0 - 19.0') CLAY, high plasticity, trace silt, trace granules to small pebbles, subangular; moist; medium stiff; gray (10YR 5/1).		
0.0										
0.0										
0.0										
0.5										
0.2		3	17.0-27.0'	10.0				(19.0 - 30.0') CLAY, low plasticity, some silt, little fine sand, trace granules to large pebbles, subangular; moist; stiff; dark grayish brown (10YR 4/2).		
0.0										

Bentonite (0-67' bgs)
 Cement (0-27' bgs)
 7" die steel casing (0-27' bgs)

	Remarks: bgs = below ground surface
--	--

Date Start: 06/15/2016
Date Finish: 06/16/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Eastings: NA
Casing Elevation: NA

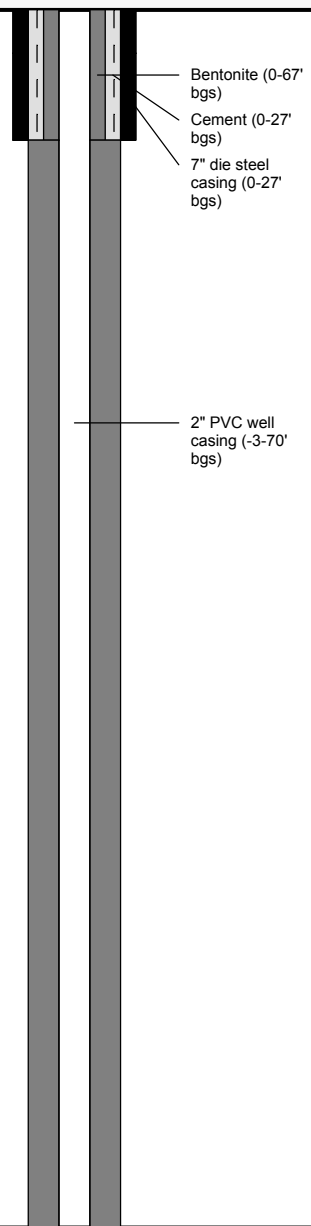
Borehole Depth (ft. bgs.): 76.0
Surface Elevation: NA

Descriptions By: Alex Villhauer

Well/Boring ID: MW-16-82
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Rain

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
25	-25				0.3					
					0.0					
		4	27.0-37.0'	9.5	0.5					
					0.5					
					0.5					
30	-30				0.5			(30.0 - 37.0') SAND, fine; well sorted; moist; brown (10YR 5/3).		
					0.2					
					0.2					
35	-35				0.0					
		5	37.0-47.0'	8.0	0.0			(37.0 - 38.5') SILT, nonplastic, little fine sand, trace small to large pebbles, subround; moist; brown (10YR 5/3).		
					0.0			(38.5 - 42.0') SAND, fine, and SILT, moist; light brown (10YR 6/3).		
40	-40				0.0					
					0.0			(42.0 - 43.0') SILT, nonplastic, fast dilatancy; moist; brown (10YR 3/3).		
					0.0			(43.0 - 47.0') SAND, fine; well sorted; moist; loose; brown (10YR 5/3).		
45	-45				0.0					
					0.0			(47.0 - 63.0') CLAY and SILT, low plasticity, trace granules to large cobble, subangular to angular; moist; very stiff; dark grayish brown (10YR 4/2). NOTE: Till.		
50	-50				0.0					
					0.0			NOTE: 10" boulder at 49.5' bgs.		
					0.0					



Remarks: bgs = below ground surface



Date Start: 06/15/2016
Date Finish: 06/16/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 76.0
Surface Elevation: NA

Descriptions By: Alex Villhauer

Well/Boring ID: MW-16-82
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Rain


DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55	6	47.0-57.0'	NA	0.0					
60	-60	7	57.0-67.0'	8.5	0.0			(63.0 - 68.0') SANDSTONE and SHALE, interbedded, heavily weathered; moist; dark gray (10YR 4/1).		Bentonite (0-67' bgs)
65	-65				0.0			(68.0 - 76.0') SANDSTONE, very fine, weathered; moist; gray (10YR 5/1).		Choker Sand (67-68' bgs)
70	-70	8	67.0-76.0	8.8	0.0					Filter Pack (68-76' bgs) 2" stainless steel, 10 slot well screen (70-75' bgs)
75	-75				0.0			End of boring at 76' bgs.		
80	-80									

Remarks: bgs = below ground surface



Date Start: 06/16/2016 Date Finish: 06/20/2016 Drilling Company: Cascade Driller's Name: Scott Parkes Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): Water Level Finish (ft. btoc.):	Northing: NA Eastings: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 76.0 Surface Elevation: NA Descriptions By: K. Voet, A. Villhauer	Well/Boring ID: MW-16-83 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 67 F, Cloudy
---	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
25	-25	4	20.0-30.0'	10.0	0.0					
					0.0			(27.5 - 30.0') SILT, nonplastic, no dilatancy, little clay, trace very fine sand, trace granules to small pebbles; moist; dark gray (10Yr 4/1).		
30	-30				NA			(30.0 - 37.5') NO RECOVERY		
					NA					
35	-35	5	30.0-40.0'	2.5	NA					
					0.0			(37.5 - 41.5') SILT, nonplastic, no dilatancy, little clay; moist; soft; dark gray (10YR 4/1). NOTE: Some clay, medium plasticity, no dilatancy; soft from 38.5 to 40.0' bgs.		2" PVC well casing (-3-71' bgs)
					0.0					Bentonite (0-68' bgs)
40	-40				0.0			(41.5 - 50.0') SAND, very fine to fine, trace granules to medium pebbles, subround; well sorted; moist; grayish brown (10YR 5/2).		
45	-45				0.0					
		6	40.0-45.0'	5.0	0.0					
					1.5					
		7	45.0-50.0'	4.0	1.5					
50	-50				0.2			(50.0 - 65.0') SILT, low to medium plasticity, no dilatancy, little clay, trace fine sand, trace granules to medium cobbles, subangular to subround; moist; medium stiff; very dark gray (10YR 5/1). NOTE: Dry from 51.0 to 52.0' bgs.		

 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No odor or staining observed
--	--

Date Start: 06/16/2016 Date Finish: 06/20/2016 Drilling Company: Cascade Driller's Name: Scott Parkes Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): Water Level Finish (ft. btoc.):	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 76.0 Surface Elevation: NA Descriptions By: K. Voet, A. Villhauer	Well/Boring ID: MW-16-83 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 67 F, Cloudy
---	---	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55	8	50.0-55.0	5.0	0.3					
		9	55.0-60.0	5.0	0.2					
60	-60	10	60.0-63.0	3.0	0.1			NOTE: Went through sandstone boulder at 59.5' bgs.		Bentonite (0-68' bgs)
65	-65	11	63.0-68.0	5.0	0.2			(65.0 - 70.0') SHALE, weathered; very dark gray (10YR 3/1).		
70	-70	12	68.0-76.0	NA	0.2			(70.0 - 76.0') NO RECOVERY		Choker Sand (68-69' bgs)
75	-75									Filter Pack (69-76' bgs) 2" stainless steel, 10 slot well screen (71-76' bgs)
80	-80							End of boring at 76' bgs.		

Remarks: bgs = below ground surface
No odor or staining observed



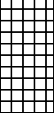














Date Start: 08/18/2016 Date Finish: 08/19/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotosonic Sampling Method: 4x6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Eastings: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 79.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-ND132 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Sunny
--	---	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
0.0		1	0.0-7.0'	8.0	0.0		(0.0 - 1.0') CONCRETE			Borehole backfilled with Bentonite
1.0					0.0		(1.0 - 2.0') SAND, fine, subround; trace granules to small pebbles, subround; trace silt; well sorted; yellowish brown (10YR 5/4).			
2.0					0.0		(2.0 - 7.0') CLAY, some silt, low plasticity, no dilatancy; little fine sand, subround; trace granules to large pebbles, subround; moist; stiff; gray (10YR 5/1).			
7.0					0.0		(7.0 - 9.0') SAND, very fine to fine, subround; little granules to medium pebbles, subround; poorly sorted; wet; brown (10YR 4/3).			
9.0		2	7.0-17.0'	10.0	0.0		(9.0 - 21.0') CLAY and SILT, low plasticity, no dilatancy; little granules to large pebbles, subround; moist; stiff, grayish brown (10YR 5/2).			
10	-10				0.0					
15	-15				0.0					
					0.0					
					0.0					

Remarks: bgs = below ground surface
No odor or staining observed



Date Start: 08/18/2016 Date Finish: 08/19/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotosonic Sampling Method: 4x6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 79.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-ND132 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Sunny
--	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
20	-20				0.0					
					0.0			(21.0 - 23.0') SAND, fine to medium, subround; trace silt; well sorted; wet; pale brown (10YR 6/3).		
		3	17.0-27.0'	10.0	0.0			(23.0 - 48.0') CLAY, some silt, medium to high plasticity, no dilatancy; little fine sand, subround; trace to little granules to large pebbles, subround; moist; stiff; grayish brown (10YR 5/2). NOTE: Glacial till.		
25	-25				0.0					
					0.0					
					0.0					
30	-30				0.0					
					0.0					
		4	27.0-37.0'	10.0	0.0					
					0.0					
					0.0					
35	-35				0.0					
					0.0					
					0.0					
40	-40				0.0					

Borehole backfilled with Bentonite

Remarks: bgs = below ground surface
No odor or staining observed



Date Start: 08/18/2016
Date Finish: 08/19/2016
Drilling Company: Cascade
Driller's Name: M. Bond
Drilling Method: Rotosonic
Sampling Method: 4x6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA




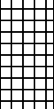
Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 79.0' bgs
Surface Elevation: NA

Descriptions By: A. Westhuis

Well/Boring ID: SB-A5.2-ND132
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 80 F, Sunny


DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
45	-45	5	37.0-47.0'	10.0	0.0					
50	-50				0.0			(48.0 - 57.0') SAND, very fine to fine, subround; trace silt; well sorted; dry; light gray (10YR 7/2).		Borehole backfilled with Bentonite
55	-55	6	47.0-57.0'	10.0	0.0			(57.0 - 59.0') CLAY, little silt, high plasticity, no dilatancy; trace fine sand, subround; trace granules to large pebbles, subround; moist; medium stiff to soft; gray (10YR 5/1).		
60	-60				0.0			(59.0 - 67.0') CLAY and SILT, non-plastic, no dilatancy; little fine sand, trace granules to medium pebbles, subround; dry; very stiff; dark gray (10YR 4/1). NOTE: Trace large sandstone and shale fragments.		
					0.0					

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 08/18/2016 Date Finish: 08/19/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotosonic Sampling Method: 4x6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 79.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-ND132 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Sunny
--	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 - 65		7	57.0-67.0'	10.0	0.0					
					0.0			(67.0 - 70.0') SANDSTONE, weathered; wet; light gry (10YR 7/1).		Borehole backfilled with Bentonite
70 - 70		8	67.0-72.0'	5.0	0.0	X		(70.0 - 72.0') SHALE and interbedded sandstone, weathered; dry to moist; dark gray (10YR 4/1).		
					0.0			(72.0 - 75.0') SANDSTONE, weathered, wet; light gray (10YR 6/1). NOTE: VAP groundwater samples collected from 67.0 to 72.0' and 74.0 to 79.0' bgs.		
75 - 75		9	72.0-76.0'	4.0	0.0			(75.0 - 76.0') SANDSTONE and interbedded shale, moist; gray (10YR 5/1).		
					0.0			(76.0 - 79.0') SANDSTONE, weathered; wet; light gray (10YR 6/1).		
		10	76.0-79.0'	3.0	0.0	X				
80 - 80					0.0			End of boring at 79.0' bgs.		

 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No odor or staining observed
--	--

Date Start: 08/17/2016 Date Finish: 08/18/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotosonic Sampling Method: 4x6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Eastings: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 84.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-ND140/MW-16-84 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Sunny
--	---	---

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
0.0		1	0.0-7.0'	7.0	NA		(0.0 - 1.0') CONCRETE			
1.0					0.0		(1.0 - 2.0') SAND, fine to coarse, some silt; little granules to medium pebbles, subround; poorly sorted; moist; brown (10YR 4/3).			
2.0					0.0		(2.0 - 6.0') CLAY, some silt; high plasticity, no dilatancy; little fine sand, trace to little granules to large pebbles, subround; moist; stiff; gray (10YR 5/1).			
6.0					0.0		(6.0 - 8.0') SAND, fine to medium, trace granules to small pebbles, subround; trace silt; well sorted; moist to wet; light yellowish brown (10YR 6/4).			
8.0					0.0		(8.0 - 17.0') CLAY, some silt; medium to high plasticity, no dilatancy; little granules to very large pebbles, trace fine sand, subround; moist; stiff; gray (10YR 5/1). NOTE: Glacial till.			
17.0		2	7.0-17.0'	9.0	0.0		(17.0 - 20.0') SAND, medium to coarse, little silt; trace granules to small pebbles, subround; well sorted; wet; grayish brown (10YR 5/2).			

Remarks: bgs = below ground surface
No odor or staining observed



Date Start: 08/17/2016 Date Finish: 08/18/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotosonic Sampling Method: 4x6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 84.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-ND140/MW-16-84 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Sunny
--	--	---


DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
-20	-20	3	17.0-27.0'	10.0	0.0			(20.0 - 26.0') CLAY, some silt, medium to high plasticity, no dilatancy; trace fine sand to large pebbles, subround; moist; stiff; gray (10YR 5/1). NOTE: Glacial till.		
-25	-25							(26.0 - 28.0') SAND, very fine to fine, subround; trace silt; well sorted; wet; light brownish gray (10YR 6/2).		
-30	-30	4	27.0-37.0'	9.0	0.0			(28.0 - 52.0') CLAY, some silt, medium plasticity, no dilatancy; little fine sand, trace granules to very large pebbles, subround; dry to moist; stiff to very stiff; gray (10YR 5/1).		Bentonite (0-68' bgs) 2" PVC well casing (-3.0-72' bgs)
-35	-35							-40		

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 08/17/2016 Date Finish: 08/18/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotasonic Sampling Method: 4x6 Casing Rig Type: Rotasonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 84.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-ND140/MW-16-84 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Sunny
--	--	---

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
45	-45	5	37.0-47.0'	8.5	0.0					
50	-50				0.0					
55	-55	6	47.0-57.0'	9.0	0.0			(52.0 - 54.0') SILT, little clay, non-plastic, no dilatancy; well sorted; moist; soft; light gray (10YR 7/1).		
					0.0			(54.0 - 59.0') SAND, very fine to fine; trace to little silt; well sorted; dry to moist; light gray (10YR 7/1).		
60	-60				0.0			(59.0 - 66.0') CLAY and SILT, low plasticity to non-plastic; trace to little very fine to fine sand, subround; trace granules to large pebbles, subround; moist; stiff; gray (10YR 5/1). NOTE: Large sandstone fragments starting at 60' bgs.		
65	-65	7	57.0-67.0'	10.0	0.0					

 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No odor or staining observed
--	--

Date Start: 08/17/2016
Date Finish: 08/18/2016
Drilling Company: Cascade
Driller's Name: M. Bond
Drilling Method: Rotosonic
Sampling Method: 4x6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 84.0' bgs
Surface Elevation: NA

Descriptions By: A. Westhuis

Well/Boring ID: SB-A5.2-ND140/MW-16-84
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 80 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
66.0					0.0			(66.0 - 69.0') SANDSTONE, very fine; light gray (10YR 7/1). NOTE: Wet at 67.0' bgs.		
69.0		8	67.0-72.0'	5.0	0.0			(69.0 - 70.0') SANDSTONE and SHALE, weathered; very fine; dry; gray (10YR 6/1).		<p>Choker Sand (68-70' bgs)</p> <p>Filter Pack (70-77' bgs)</p> <p>2" stainless steel, 10 slot well screen (72-77' bgs)</p> <p>Natural Collapse (77-84' bgs)</p>
70.0					0.0			(70.0 - 72.0') SHALE, weathered; dry; dark gray (10YR 4/1).		
72.0					0.0			(72.0 - 74.0') SANDSTONE, weathered, very fine; dry; light gray (10YR 7/1).		
74.0		9	72.0-77.0'	5.0	0.0	X		(74.0 - 75.0') SANDSTONE and SHALE, weathered; moist to wet; gray (10YR 6/1).		
75.0					0.0			(75.0 - 84.0') SANDSTONE, little interbedded shale.		
77.0					0.0			NOTE: VAP groundwater samples collected from 72.0 to 77.0' and 79.0 to 84.0' bgs.		
79.0					0.0					
80.0		10	77.0-82.0'	NA	0.0	X				
82.0					0.0					
84.0		11	82.0-84.0'	NA	0.0					
85.0					0.0			End of boring at 84.0' bgs.		

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 08/18/2016
Date Finish: 08/18/2016
Drilling Company: Cascade
Driller's Name: M. Bond
Drilling Method: Rotosonic
Sampling Method: 4x6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 79.0' bgs
Surface Elevation: NA

Descriptions By: A. Westhuis

Well/Boring ID: SB-A5.2-NK140
Client: RACER
Location: RACER Lansing Plant 2


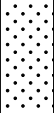

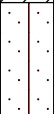

Weather Conditions: 80 F, Partly Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
0.0		1	0.0-7.0'	7.0			X X	(0.0 - 1.0') Crushed concrete and asphalt, some fine sand, subround; brown (10YR 4/3). NOTE: Fill.		Borehole backfilled with Bentonite.
0.0							[Cross-hatch pattern]	(1.0 - 2.0') CONCRETE		
0.0							[Dotted pattern]	(2.0 - 6.0') SAND, very fine to fine, subround; little granules to medium pebbles, subround; and SILT, trace clay, non-plastic to low plasticity, no dilatancy; moist; medium stiff; brown (10YR 4/3).		
0.3							[Dotted pattern]			
1.2							[Dotted pattern]			
11.5							[Diagonal lines pattern]	(6.0 - 9.0') CLAY, some silt, medium to low plasticity, no dilatancy; little to some fine sand, subround; trace granules to small pebbles, subround; moist to wet; medium stiff to soft; dark gray (10YR 4/1).		
1.9							[Diagonal lines pattern]			
1.6							[Diagonal lines pattern]			
1.1							[Dotted pattern]	(9.0 - 10.0') SAND, fine, subround; little to some silt; wet; well sorted; black (10YR 2/1). NOTE: Black (10YR 2/1) staining, moderate odor.		
0.8							[Dotted pattern]	(10.0 - 13.0') SAND, fine to medium, some coarse sand, subround; trace granules to medium pebbles, subround; trace to little silt; poorly sorted; wet; light brownish gray (10YR 6/2).		
0.2							[Dotted pattern]			
0.0		2	7.0-17.0'	9.0			[Diagonal lines pattern]	(13.0 - 20.0') CLAY, some silt; medium to high plasticity, no dilatancy; little fine sand, trace granules to very large pebbles, subround; dry to moist; stiff to very stiff; brown (10YR 5/3). NOTE: Glacial till.		
0.0							[Diagonal lines pattern]			
0.0							[Diagonal lines pattern]			
0.0							[Diagonal lines pattern]			
0.0							[Diagonal lines pattern]			

Remarks: bgs = below ground surface
 No odor or staining observed
 VAP samples collected from screened intervals 67.0-72.0' bgs and 74.0-79.0' bgs



Date Start: 08/18/2016 Date Finish: 08/18/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotosonic Sampling Method: 4x6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 79.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-NK140 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Partly Cloudy
--	--	--


DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
20	-20	3	17.0-27.0'	9.0	0.0					Borehole backfilled with Bentonite.
	0.0					(20.0 - 22.0') SAND, medium, subangular; trace silt; well sorted; wet; grayish brown (10YR 5/2).				
	0.0					(22.0 - 31.0') CLAY, some silt, medium plasticity, no dilatancy; trace fine sand, trace granules to large pebbles, subround; dry to moist; stiff; grayish brown (10YR 5/2).				
25	-25				0.0					
				0.0						
				0.0						
				0.0						
30	-30	4	27.0-37.0'	10.0	0.0			(31.0 - 33.0') SAND, very fine to fine, subround; and SILT, non-plastic, slow dilatancy; well sorted; wet; pale brown (10YR 6/3).		
	0.0					(33.0 - 51.0') CLAY, some silt, low plasticity, no dilatancy; little granules to very large pebbles, subround; trace fine sand; dry; very stiff; grayish brown (10YR 5/2).				
	0.0									
35	-35				0.0					
				0.0						
				0.0						
				0.0						
				0.0						
40	-40									

Remarks: bgs = below ground surface
 No odor or staining observed
 VAP samples collected from screened intervals 67.0-72.0' bgs and 74.0-79.0' bgs




Date Start: 08/18/2016 Date Finish: 08/18/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotosonic Sampling Method: 4x6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 79.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-NK140 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Partly Cloudy
--	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
45	-45	5	37.0-47.0'	NA	0.0					
50	-50				0.0					
55	-55	6	47.0-57.0'	10.0	0.0			(51.0 - 56.5') SAND, very fine to fine, subround; trace silt; well sorted; dry; light gray (10YR 7/1).		Borehole backfilled with Bentonite.
					0.0			(56.5 - 59.0') CLAY, some silt, low to medium plasticity, no dilatancy; dry to moist; medium stiff; gray (10YR 5/1).		
60	-60				0.0			(59.0 - 66.0') SANDSTONE, little interbedded shale, weathered; dry; light gray (10YR 7/1).		

 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No odor or staining observed VAP samples collected from screened intervals 67.0-72.0' bgs and 74.0-79.0' bgs
--	---

Date Start: 08/18/2016 Date Finish: 08/18/2016 Drilling Company: Cascade Driller's Name: M. Bond Drilling Method: Rotasonic Sampling Method: 4x6 Casing Rig Type: Rotasonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 79.0' bgs Surface Elevation: NA Descriptions By: A. Westhuis	Well/Boring ID: SB-A5.2-NK140 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 80 F, Partly Cloudy
--	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 - 65		7	57.0-65.0'	8.0	0.0					
		8	65.0-67.0'	2.0	0.0			(66.0 - 69.0') SANDSTONE, trace interbedded shale; weathered; wet; light gray (10YR 7/1).		
70 - 70		9	67.0-72.0'	5.0	0.0	X		(69.0 - 79.0') SANDSTONE and SHALE, weathered; gray (10YR 5/1).		Borehole backfilled with Bentonite.
		10	72.0-76.0'	4.0	0.0			NOTE: VAP groundwater samples collected from 67.0 to 72.0' and 74.0 to 79.0' bgs.		
75 - 75		11	76.0-79.0'	3.0	0.0	X				
80 - 80					0.0			End of boring at 79.0' bgs.		

 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No odor or staining observed VAP samples collected from screened intervals 67.0-72.0' bgs and 74.0-79.0' bgs
--	---

Date Start: 06/09/2016
Date Finish: 06/10/2016
Drilling Company: Cascade
Driller's Name: Dave Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 78.0
Surface Elevation: NA

Descriptions By: Alex Villhauer

Well/Boring ID: SB-A5.2-NQ140
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
0.0		1	0.0-5.0'	4.1	0.0	X		(0.0 - 3.5') SAND, very fine to fine, little granules to small pebbles, subround, trace organics, tree roots; moist; loose; brown (10YR 5/3)		
3.5					0.0	X		(3.5 - 6.0') SAND, fine to coarse, trace granules to small pebbles, subangular to subround; poorly sorted; loose; moist; brown (10YR 5/3). NOTE: Saturated at 5.0' bgs.		
6.0		2	5.0-10.0'	5.0	0.2	X		(6.0 - 12.5') CLAY, medium plasticity, some silt, trace granules to medium pebbles, subangular; moist; stiff; brown (10YR 4/3). NOTE: Black staining and odor from 6.0-6.5' bgs; color change to dark gray (10YR 4/1) at 9.0' bgs.		
12.5					0.7	X				
12.5					0.0	X		(12.5 - 14.0') SAND, fine to coarse, trace granules, subround; poorly sorted; saturated; brown (10YR 5/3).		
14.0		3	10.0-20.0'	9.0	0.0	X		(14.0 - 26.0') CLAY, low plasticity, some silt, trace fine sand, trace granules to large pebbles, subangular; moist; stiff; dark gray (10YR 4/1).		
18.0					0.0	X				
24.0					1.2	X				
24.0					0.1	X		NOTE: Horizontal fractures at 18.0' and 24' bgs.		
26.0					0.0	X				
26.0					2.2	X				
26.0		4	20.0-30.0'	9.5	0.0	X				

Borehole backfilled with Bentonite.

Remarks: bgs = below ground surface



Date Start: 06/09/2016
Date Finish: 06/10/2016
Drilling Company: Cascade
Driller's Name: Dave Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA


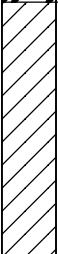
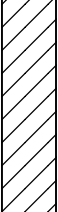
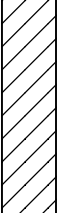
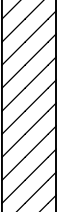
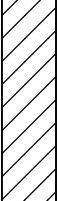
Northing: NA
Easting: NA
Casing Elevation: NA

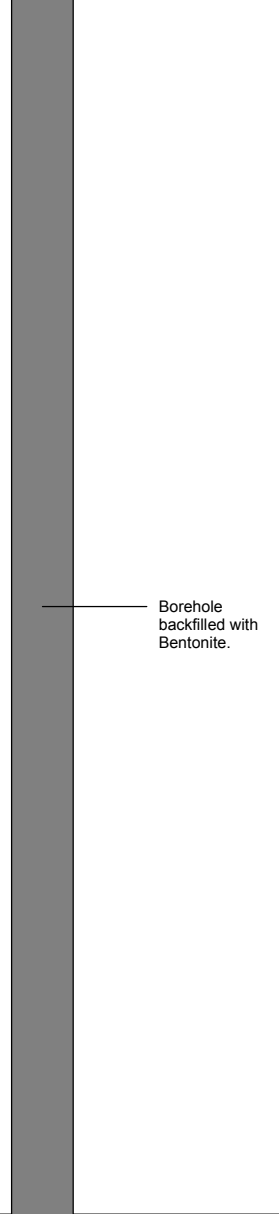
Borehole Depth (ft. bgs.): 78.0
Surface Elevation: NA

Descriptions By: Alex Villhauer

Well/Boring ID: SB-A5.2-NQ140
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
30	-30				0.0	X		(26.0 - 29.0') CLAY, high plasticity, trace granules, subangular; moist; soft; dark gray (10YR 4/1).		
35	-35	5	30.0-40.0'	NA	0.0	X		(29.0 - 55.0') CLAY, low plasticity, some silt, little fine sand, trace coarse sand to large pebbles, subangular to angular; moist; stiff; dark gray (10YR 4/1). NOTE: till.		
40	-40				0.0	X				
45	-45	6	40.0-50.0'	10.0	0.0	X				
50	-50				0.0	X				
		7	50.0-55.0'	5.0		X		NOTE: Thin sand seam (<1 cm), fine at 49' bgs.		



Remarks: bgs = below ground surface



Date Start: 06/09/2016
Date Finish: 06/10/2016
Drilling Company: Cascade
Driller's Name: Dave Gordon
Drilling Method: Rotasonic
Sampling Method: 4X6 Casing
Rig Type: Rotasonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 78.0
Surface Elevation: NA

Descriptions By: Alex Villhauer

Well/Boring ID: SB-A5.2-NQ140
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55	8	55.0-60.0'	NA		X		(55.0 - 59.0') SAND, very fine to fine, some silt; moist; dense; dark grayish brown (10YR 4/2).		Borehole backfilled with Bentonite.
60	-60	9	60.0-65.0'	4.2		X		(59.0 - 64.0') SILT, some clay, trace fine sand, trace small pebble to cobble, subangular to angular; moist; dense; dark gray (10YR 4/1). NOTE: till.		
65	-65	10	65.0-70.0'	4.0		X		(64.0 - 65.0') SHALE, weathered; moist; soft; very dark brown (10YR 2/2).		
65	-65	10	65.0-70.0'	4.0		X		(65.0 - 68.5') SANDSTONE, very fine, heavily weathered; moist; gray (10YR 5/1).		
70	-70	11	70.0-75.0'	4.5		X		(68.5 - 76.0') SHALE and SANDSTONE, fine, interbedded, slightly weathered; moist; very dark gray (10YR 3/1). NOTE: predominately shale.		
75	-75	12	75.0-78.0'	NA		X		NOTE: VAP groundwater samples collected from 65' to 70' and 73' to 78' bgs. (76.0 - 78.0') SANDSTONE, very fine, lightly weathered; dry; gray (10YR 5/1).		
80	-80							End of boring at 78' bgs.		

Remarks: bgs = below ground surface



Date Start: 06/08/2016
Date Finish: 06/09/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 72.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.2-NV137
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 72 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
0.1		1	0.0 5.0'	5.0		X	(0.0 - 2.5') SAND, fine to medium, little granules to large pebbles; well sorted; moist; yellowish brown (10YR 5/6).			
0.1						X	(2.5 - 7.0') SAND, fine to medium, little granules to large pebbles, trace clay, nonplastic, no dilatancy; yellowish brown (10YR 5/6). NOTE: Glass debris in soil from 2.5-3.5' bgs.			
0.1	-5	2	5.0- 10.0'	5.0		X	(7.0 - 9.0') SILT and CLAY, low plasticity, no dilatancy, some very fine to fine sand, trace granules to medium pebbles, subangular to angular; moist; medium stiff to stiff; dark yellowish brown (10YR 4/4).			
0.2						X	(9.0 - 10.0') CLAY, low plasticity, no dilatancy, little silt, trace granules to medium pebbles, subangular; moist; medium stiff to stiff; dark grayish brown (10YR 4/2).			
0.1	-10	3	10.0- 15.0'	5.0		X	(10.0 - 14.0') SAND, fine to medium, little granules to small pebbles, trace clay; saturated; olive brown (10YR 4/3).			
0.2						X	(14.0 - 15.0') SAND, very fine to fine, and SILT, low plasticity, no dilatancy, trace granules; well sorted; olive brown (10YR 1/3). NOTE: Color change to very dark grayish brown (10YR 3/2) at 14.5' bgs.			
0.1	-15	4	15.0- 20.0'	5.0		X	(15.0 - 30.0') CLAY and SILT, medium plasticity, no dilatancy, little fine sand, trace granules to small pebbles; moist; medium stiff to stiff; dark grayish brown (10YR 3/2).			
0.1	-20					X				
0.1		5	20.0- 25.0'	5.0		X				

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/08/2016
Date Finish: 06/09/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Eastings: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 72.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.2-NV137
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 72 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
25	-25				0.2	X				
		6	25.0-30.0'	5.0	0.0	X		NOTE: Coarse sand seam, small to medium pebbles, subangular to subround; wet at 26.5-27.5' bgs.		
					0.0	X				
30	-30				0.0	X		(30.0 - 50.0') CLAY, nonplastic to low plasticity, no dilatancy, some silt, trace granules to large pebbles, subround to subangular; moist; stiff to very stiff; very dark grayish brown (10YR 3/2).		
		7	30.0-35.0'	2.0	0.0	X				
					0.0	X				
35	-35				0.0	X				
		8	35.0-40.0'	5.0	0.0	X				
					0.0	X				
40	-40				0.0	X				
		9	40.0-45.0'	5.0	0.1	X				
					0.1	X				
45	-45				0.3	X				
		10	45.0-50.0'	NA	0.1	X				
					0.0	X				
50	-50				0.0	X				

Borehole backfilled with Bentonite.

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/08/2016
Date Finish: 06/09/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotasonic
Sampling Method: 4X6 Casing
Rig Type: Rotasonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 72.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.2-NV137
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 72 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55		50.0-60.0'	5.0	0.1	X	(50.0 - 59.0') SAND, fine, some silt; well sorted; moist; very dark grayish brown (10YR 3/2). NOTE: 10' run with poor recovery.			
60	-60	12	60.0-65.0'	5.0	0.0	X	(59.0 - 65.0') SANDSTONE, heavily weathered; moist; very dark grayish brown (10YR 3/2). NOTE: VAP groundwater samples collected from 60' to 65' and 65' to 70' bgs.			
65	-65	13	65.0-70.0'	5.0	0.0	X	(65.0 - 66.5') SHALE, heavily weathered; moist; soft; very dark gray (10YR 3/1). (66.5 - 67.0') SANDSTONE, very fine, weathered; moist; gray (10YR 5/1). (67.0 - 68.0') SHALE, heavily weathered; moist; soft; very dark gray (10YR 3/1). (68.0 - 69.2') SANDSTONE, very fine, weathered; moist; gray (10YR 5/1). (69.2 - 70.0') SHALE, weathered; moist; very dark brown (10YR 2/2).			
70	-70						End of boring at 70' bgs.			
75	-75									

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/07/2016 Date Finish: 06/08/2016 Drilling Company: Cascade Driller's Name: David Gordon Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 75.0 Surface Elevation: NA Descriptions By: Kaitlyn Voet	Well/Boring ID: SB-A5.2-OB134 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 69 F, Sunny
---	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
					NA	×	(0.0 - 1.0') CONCRETE			
					0.0		(1.0 - 3.0') SAND, fine to coarse, subangular to subround; poorly sorted; moist; brown (10YR 5/3).			
					0.0		(3.0 - 5.0') SAND, fine to medium, some silt, little granules to medium pebbles, subangular to subround; poorly sorted; moist; dark brown (10YR 3/3).			
5	-5	1	0.0-10.0'	8.0	0.0	×	(5.0 - 11.0') SAND, fine to medium, trace granules to small pebbles; well sorted; moist; black (10YR 2/1). NOTE: Slight odor.			
					0.0					
					0.0					
					0.9					
					0.9					
10	-10	2	10.0-11.0'	NA	0.0	×	(11.0 - 25.0') CONCRETE			
15	-15									
20	-20	3	11.0-25.0'	NA						
25	-25									

Remarks: bgs = below ground surface
No staining observed.



Date Start: 06/07/2016
Date Finish: 06/08/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 75.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.2-OB134
Client: RACER

Location: RACER Lansing Plant 2

Weather Conditions: 69 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
25.0 - 30.0'		4	25.0-30.0'	5.0	0.0	X	[Diagonal Hatching]	(25.0 - 40.0') CLAY, low plasticity, no dilatancy, some silt, trace fine sand, trace granules to small pebbles, subangular to subround; medium stiff; moist; dark grayish brown (10YR 4/2). NOTE: Becomes stiff at 29.5' bgs.		Borehole backfilled with Bentonite.
30.0 - 35.0'		5	30.0-35.0'	5.0	0.0	X				
35.0 - 40.0'		6	35.0-40.0'	5.0	0.0	X	[Diagonal Hatching]	NOTE: SAND, fine; SILT seam; saturated at 37.0' bgs.		
40.0 - 45.0'		7	40.0-45.0'	5.0	NA	X		(40.0 - 45.0') NO RECOVERY, rock was caught in shoe of drill.		
45.0 - 47.0'					0.0	X	[Diagonal Hatching]	(45.0 - 47.0') CLAY, medium plasticity, little silt, trace granules, subangular; moist, stiff; very dark grayish brown (10YR 3/1).		
47.0 - 50.0'		8	45.0-50.0'	5.0	0.0	X	[Dotted Pattern]	(47.0 - 57.0') SAND, fine, well sorted; moist; dark grayish brown (10YR 4/2). NOTE: Some silt from 50.0-52.0' bgs.		
50.0 - 52.0'					0.3	X	[Dotted Pattern]			

Remarks: bgs = below ground surface
 No staining observed.



Date Start: 06/07/2016
Date Finish: 06/08/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 75.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.2-OB134
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 69 F, Sunny


DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55	9	50.0-55.0'	5.0	0.0	×				
60	-60	10	55.0-60.0'	5.0	0.0	×		(57.0 - 60.0') SANDSTONE, heavily weathered, interbedded with shale; very dark grayish brown (10YR 3/2).		
65	-65	11	60.0-65.0'	5.0	0.0	×		(60.0 - 66.0') SHALE, heavily weathered; dark gray (10YR 4/1). NOTE: VAP groundwater samples collected from 65' to 70' and 70' to 75' bgs.		
70	-70	12	65.0-70.0'	5.0	0.0			(66.0 - 69.7') SANDSTONE, heavily weathered, very dark grayish brown (10YR 3/2). (69.7 - 70.0') SHALE, weathered; moist; very dark brown (10YR 3/3).		
75	-75	13	70.0-75.0'	5.0	0.2			(70.0 - 75.0') SHALE, heavily weathered dark gray (10YR 4/1).		
								End of boring at 75' bgs.		

Remarks: bgs = below ground surface
 No staining observed.



Date Start: 06/06/2016 Date Finish: 06/07/2016 Drilling Company: Cascade Driller's Name: David Gordon Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: Easting: Casing Elevation: NA Borehole Depth (ft. bgs.): 75.0 Surface Elevation: Descriptions By: Kaitlyn Voet	Well/Boring ID: SB-A5.2-OE130 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 69 F, Sunny
---	---	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0							(0.0 - 1.0') CONCRETE		
						0.0	X	(1.0 - 2.0') SAND, fine to coarse, some debris; poorly sorted; moist; brown (10YR 5/3).		
						0.0		(2.0 - 10.0') SAND, fine to medium, little coarse sand to small pebbles, subangular to subround; well sorted; wet; brown (10YR 5/3).		
5	-5	1	0.0-10.0'	6.5		0.6	X			
						0.0				
						0.0				
						0.6	X	NOTE: Color change to dark grayish brown (10YR 4/2); slight odor at 8.5' bgs.		
10	-10							(10.0 - 28.0') CONCRETE		
		2	10.0-15.0'	5.0						
15	-15									
		3	15.0-28.0'	NA						
20	-20									
25	-25									

 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No staining observed.
--	---

Date Start: 06/06/2016
Date Finish: 06/07/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Eastings:
Casing Elevation: NA
Borehole Depth (ft. bgs.): 75.0
Surface Elevation:
Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.2-OE130
Client: RACER
Location: RACER Lansing Plant 2
Weather Conditions: 69 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
28.0 - 30.0		4	28.0-30.0'	2.0	0.0	X	[Cross-hatched pattern]	(28.0 - 35.0') CLAY, nonplastic to low plasticity, no dilatancy, some small pebbles, little silt; moist; stiff to very stiff; dark grayish brown (10YR 4/2).		Borehole backfilled with Bentonite.
30.0 - 35.0		5	30.0-35.0'	5.0	0.1	X	[Diagonal lines pattern]	NOTE: Medium plasticity, medium stiff; dark gray (10YR 4/1) at 29.5' bgs.		
35.0 - 40.0		6	35.0-40.0'	5.0	0.1	X	[Diagonal lines pattern]	(35.0 - 44.0') CLAY, low plasticity to nonplastic, no dilatancy, little silt, little small to large pebbles, subangular to subround; medium stiff to stiff; dark gray (10YR 4/1).		
40.0 - 45.0		7	40.0-45.0'	5.0	0.1	X	[Diagonal lines pattern]	(44.0 - 45.5') CLAY, low plasticity to nonplastic, no dilatancy, little silt; moist; medium stiff to soft; dark gray (10YR 4/1).		
45.0 - 50.0		8	45.0-50.0'	5.0	0.1	X	[Dotted pattern]	(45.5 - 59.0') SAND and SILT, fine to medium, some small to medium pebbles, subangular to subround; well sorted; dry; light gray (10YR 7/2).		
50.0 - 55.0					0.1		[Dotted pattern]			
55.0 - 60.0					0.1		[Dotted pattern]			
60.0 - 65.0					0.1		[Dotted pattern]			

Remarks: bgs = below ground surface
 No staining observed.



Date Start: 06/06/2016
Date Finish: 06/07/2016
Drilling Company: Cascade
Driller's Name: David Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA

Borehole Depth (ft. bgs.): 75.0
Surface Elevation:

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.2-OE130
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 69 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55	9	50.0-55.0'	2.5	0.1	X				
					0.1	X				
		10	55.0-60.0'	NA	0.0			(59.0 - 60.0') SAND and SILT, fine, subround; well sorted; dry; dark gray (10YR 4/1).		
					0.0			(60.0 - 64.5') CLAY and SILT, low plasticity, no dilatancy, little sand, fine to very fine; moist; medium stiff to soft; very dark gray (10YR 3/1).		
		11	60.0-65.0'	5.0	0.1	X				
					0.0	X		(64.5 - 71.5') BEDROCK, heavily weathered, sandstone, very fine; moist; gray (10YR 5/1).		
		12	65.0-70.0'	5.0	0.0			NOTE: VAP groundwater samples collected from 65' to 70' and 70' to 75' bgs.		
					0.0			(71.5 - 73.0') Interbedded SHALE and SANDSTONE, 1 mm laminations, weathered; moist; very dark gray (10YR 3/1).		
		13	70.0-75.0'	NA	0.0			(73.0 - 75.0') SHALE, lightly weathered; moist; dark gray (10YR 4/1).		
					0.0			End of boring at 75' bgs.		

Remarks: bgs = below ground surface
 No staining observed.



Date Start: 06/13/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA

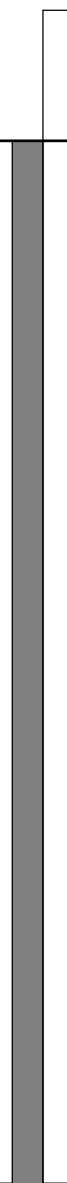
Borehole Depth (ft. bgs.): 73.0
Surface Elevation:

Descriptions By: A. Villhauer/K. Voet

Well/Boring ID: SB-A5.2-PP85/MW-16-77
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 60-80 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
0.9							☒☒ (0.0 - 0.3') ASPHALT			
0.9							☒☒ (0.3 - 1.3') PEBBLES, small to large, subrounded, some fine to coarse sand; poorly sorted; moist; dark brown (10YR 3/3). NOTE: fill.			
0.9		1	0.0-10.0'	9.0			(1.3 - 10.0') CLAY, high plasticity, little fine to coarse sand, little granules to large pebbles, subangular to subround, trace debris; moist; soft; dark grayish brown (10YR 4/2). NOTE: fill.			
0.9										
0.0										
10.0	-10							(10.0 - 14.0') NO RECOVERY		
0.9										
0.9										
15.0	-15	2	10.0-20.0'	5.0			(14.0 - 16.0') SAND, fine, trace small pebbles, subangular; well sorted; dense; saturated; dark yellowish brown (10YR 4/6).			
0.9										
0.0										
20.0	-20							(16.0 - 20.0') CLAY and SILT, low plasticity, trace granules to small pebbles, subangular; moist; stiff; brown (10YR 4/3).		
0.9										
0.0										
								(20.0 - 30.0') CLAY, medium plasticity, some silt, trace fine sand, trace granules to small pebbles, subangular; medium stiff; moist; dark gray (10YR 4/1). NOTE: soft from 24-25' bgs.		



Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/13/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA



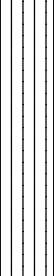
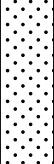

Northing:
Easting:
Casing Elevation: NA

Borehole Depth (ft. bgs.): 73.0
Surface Elevation:

Descriptions By: A. Villhauer/K. Voet

Well/Boring ID: SB-A5.2-PP85/MW-16-77
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 60-80 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
25	-25	3	20.0-30.0'	9.5	0.0					
30	-30				0.0			(30.0 - 39.5') SAND, fine; well sorted; moist; loose; brown (10YR 5/3). NOTE: SILT seams, dense at 32.2' to 32.5' and 33' to 33.5' bgs.		2" PVC well casing (-3-66' bgs)
35	-35	4	30.0-40.0'	NA	0.0			(39.5 - 46.0') SILT, some fine sand, trace small to large pebbles, subround; dense, saturated; brown (10YR 4/3).		Bentonite (0-63' bgs)
45	-45	5	40.0-50.0'	8.3	0.0			(46.0 - 50.0') SAND, fine; well sorted; moist; brown (10YR 5/3).		
50	-50				0.0			(50.0 - 60.0') CLAY and SILT, low plasticity, trace granules to cobbles, subangular to angular; moist; very stiff; very dark grayish brown (10YR 3/2).		

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/13/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotasonic
Sampling Method: 4X6 Casing
Rig Type: Rotasonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA

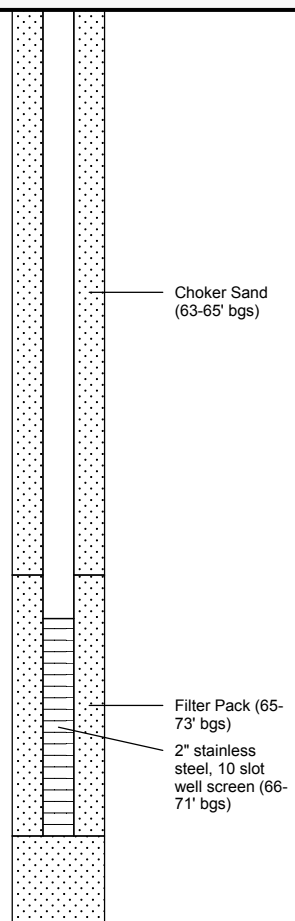
Borehole Depth (ft. bgs.): 73.0
Surface Elevation:

Descriptions By: A. Villhauer/K. Voet

Well/Boring ID: SB-A5.2-PP85/MW-16-77
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 60-80 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55	6	50.0-60.0'	7.5	0.9					
60	-60				0.9					
65	-65	7	60.0-70.0'	7.5	0.9					
					0.0			(60.0 - 64.5') SANDSTONE and SHALE, interbedded, fine; heavily weathered; moist; dark gray (10YR 4/1).		
					0.0	X				
					0.0			(64.5 - 66.0') SHALE, lightly weathered; moist; very dark brown (10YR 2/2).		
					0.0			(66.0 - 73.0') SANDSTONE and SHALE, interbedded, fine, weathered; moist; dark gray (10YR 4/1).		
					0.0			NOTE: VAP groundwater samples collected from 60' to 65' and 68' to 73' bgs.		
70	-70	8	70.0-73.0'	3.0	0.0					
					0.0	X				
					0.0					
75	-75							End of boring at 73' bgs.		




Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/08/2016 Date Finish: 06/10/2016 Drilling Company: Cascade Driller's Name: Scott Parkes Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: Easting: Casing Elevation: NA Borehole Depth (ft. bgs.): 73.0 Surface Elevation: Descriptions By: A. Villhauer/K. Voet	Well/Boring ID: SB-A5.3-OO141 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 70 F, Sunny
---	---	--


DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0	1	0.0-1.5'	NA	NA		(0.0 - 1.5') CONCRETE			
		2	1.5-7.0'	2.5	0.0		(1.5 - 7.0') SAND, fine to coarse, some granules to medium pebbles, subround; poorly sorted; wet; loose; Brown (10YR 4/3). NOTE: Fill.			
		3	7.0-17.0'	9.0	0.0		(7.0 - 13.0') CLAY, low plasticity, some fine to medium sand, little granules to large pebbles, subround; soft; moist; brown (10YR 4/3). NOTE: Fill; green mottling.			
		4	17.0-27.0'	8.5	0.0		(13.0 - 24.0') CLAY, medium plasticity, little silt, little fine sand, trace granules to large pebbles, subangular to angular; medium stiff; moist; dark grayish brown (10YR 4/2).			
					0.0		(24.0 - 30.0') CLAY, low plasticity, some silt, some fine sand, trace granules to small pebbles, subangular; soft; moist; gray (10YR 4/1).			

 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No odor or staining observed.
--	---

Date Start: 06/08/2016 Date Finish: 06/10/2016 Drilling Company: Cascade Driller's Name: Scott Parkes Drilling Method: Rotasonic Sampling Method: 4X6 Casing Rig Type: Rotasonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: Easting: Casing Elevation: NA Borehole Depth (ft. bgs.): 73.0 Surface Elevation: Descriptions By: A. Villhauer/K. Voet	Well/Boring ID: SB-A5.3-OO141 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 70 F, Sunny
---	---	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
					0.0			NOTE: 1 cm thick fine sand and silt seam; saturated at 25.5' and 26.2' bgs.		
30	-30	5	27.0-37.0'	10.0	0.0			(30.0 - 37.0') SILT, some clay, trace fine sand, trace granules to small pebbles, angular; dense; moist dark gray (10YR 4/2). NOTE: Till.		
35	-35				0.0					
					0.1			(37.0 - 39.0') SAND fine, little silt, well sorted; moist; dark grayish brown (10YR 4/2).		
40	-40	6	37.0-47.0'	10.0	0.1			(39.0 - 50.0') SILT, some clay, trace fine sand, trace granules to medium pebbles, subangular; moist; very dark grayish brown (10YR 3/2).		
45	-45				0.1					
50	-50				0.1			(50.0 - 53.0') SILT, some clay, trace granules to medium pebbles, subangular; medium stiff to stiff; moist; very dark grayish brown (10YR 3/2).		
					0.1					

Borehole backfilled with Bentonite.

 <small>Design & Consultancy for natural and built assets</small>	Remarks: bgs = below ground surface No odor or staining observed.
--	---

Date Start: 06/08/2016
Date Finish: 06/10/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotasonic
Sampling Method: 4X6 Casing
Rig Type: Rotasonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA

Borehole Depth (ft. bgs.): 73.0
Surface Elevation:

Descriptions By: A. Villhauer/K. Voet

Well/Boring ID: SB-A5.3-OO141
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55 - 55		7	47.0-57.0'	10.0				(53.0 - 57.0') SAND, fine, well sorted; moist; pale brown (10YR 6/3).		
					0.1					
					0.1					
					0.1			(57.0 - 58.0') SAND, coarse to fine, some small cobbles to coarse gravel; poorly sorted; moist; gray (10YR 5/1).		
					0.1			(58.0 - 58.5') SILT, some clay, trace granules to small pebbles, subangular, trace fine sand; medium stiff; moist; dark grayish brown (10YR 4/2).		
60 - 60					0.1			(58.5 - 61.0') SANDSTONE, weathered, interbedded with shale; dark grayish brown (10YR 4/2) to very dark grayish brown (10YR 3/2).		
					0.1			(61.0 - 63.0') SHALE, nearly weathered; dark gray (10YR 4/1).		
		8	57.0-67.0'	10.0				(63.0 - 73.0') SANDSTONE, weathered; dark grayish brown (10YR 4/2).		
65 - 65					0.1					
					0.1					
					0.1					
70 - 70		9	67.0-73.0'	3.5				NOTE: VAP groundwater samples collected from 58' to 63', 63' to 68' and 68' to 73' bgs.		
					0.1					
					0.1					
75 - 75								End of boring at 73' bgs.		

Remarks: bgs = below ground surface
 No odor or staining observed.



Date Start: 06/13/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.):
Water Level Finish (ft. btoc.):

Northing: NA
Easting: NA
Casing Elevation: NA

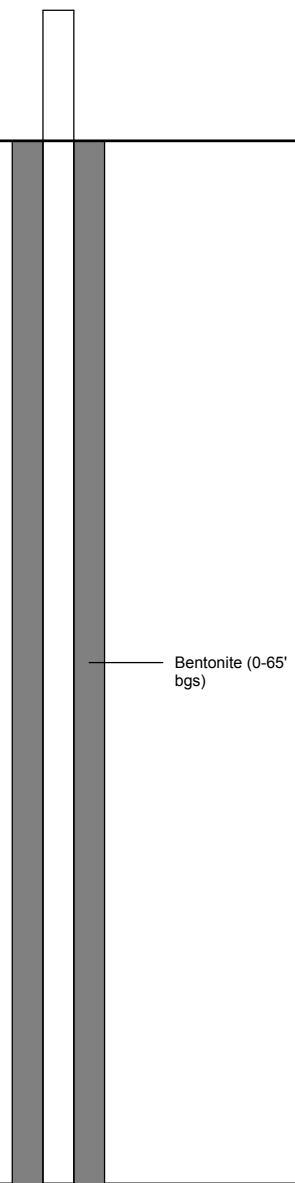
Borehole Depth (ft. bgs.): 75.0
Surface Elevation: NA

Descriptions By: K. Voet/A. Villhauer

Well/Boring ID: SB-A5.3-OR159/MW-16-79
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 60 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
		1	0.0-2.0'	NA	NA		[Cross-hatch pattern]	(0.0 - 2.0') CONCRETE		
		2	2.0-7.0'	2.0	0.5		[Diagonal lines pattern]	(2.0 - 11.5') CLAY, high plasticity, slow dilatancy; moist; soft; black (10YR 2/1). NOTE: Slight odor; debris in concrete and soil; metal grating.		
					0.8		[Diagonal lines pattern]			
					0.5		[Diagonal lines pattern]			
					0.6		[Diagonal lines pattern]			
					0.8		[Diagonal lines pattern]			
		3	7.0-17.0'	10.0	0.4		[Diagonal lines pattern]	(11.5 - 17.0') CLAY, medium plasticity, no dilatancy, trace fine sand, trace granules to medium pebbles, subround to round; moist; soft; dark gray (10YR 4/1). NOTE: Strong odor.		
					0.8		[Diagonal lines pattern]			
					0.1		[Diagonal lines pattern]			
					0.1		[Diagonal lines pattern]	(17.0 - 19.5') CLAY, medium plasticity, no dilatancy, trace silt, trace fine sand; soft; dark gray (10YR 4/1).		
					0.1		[Diagonal lines pattern]			
					0.1		[Diagonal lines pattern]			
		4	17.0-27.0'	10.0	0.1		[Grid pattern]	(19.5 - 29.5') SILT and CLAY, low plasticity, no dilatancy, little fine sand, trace granules to small pebbles, subround; moist; medium stiff; dark gray (10YR 4/1).		
					0.1		[Grid pattern]			



Remarks: bgs = below ground surface
 No staining observed



Date Start: 06/13/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.):
Water Level Finish (ft. btoc.):

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 75.0
Surface Elevation: NA

Descriptions By: K. Voet/A. Villhauer

Well/Boring ID: SB-A5.3-OR159/MW-16-79
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 60 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
25	-25				0.1					
					0.1					
					0.1					
30	-30	5	27.0-37.0'	10.0	0.1			(29.5 - 30.5') SAND, fine to medium, some silt, trace granules to medium pebble, subround poorly sorted; moist; dark gray (10YR 4/1).		
					0.1			(30.5 - 56.0') SILT, low plasticity, no dilatancy, little clay, little fine sand, trace granules to medium pebble, subround to subangular; moist; medium stiff; dark gray (10YR 4/1).		
					0.1					2" PVC well casing (-3-68' bgs)
35	-35				0.1					
					0.1					
					0.1					
40	-40	6	37.0-47.0'	10.0	0.1					
					0.1					
					0.1					
45	-45				0.1					
					0.1					
					0.1					
50	-50				0.1					
					0.1					
					0.1					

Remarks: bgs = below ground surface
 No staining observed



Date Start: 06/13/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.):
Water Level Finish (ft. btoc.):

Northing: NA
Easting: NA
Casing Elevation: NA

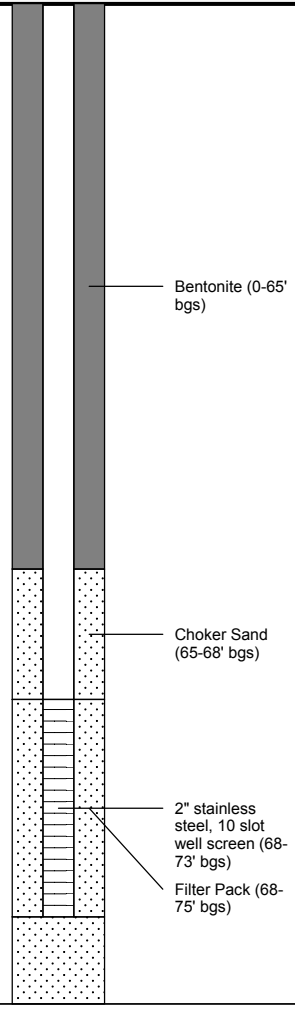
Borehole Depth (ft. bgs.): 75.0
Surface Elevation: NA

Descriptions By: K. Voet/A. Villhauer

Well/Boring ID: SB-A5.3-OR159/MW-16-79
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 60 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
55	-55	7	47.0-57.0'	10.0	0.1					
					0.1			(56.0 - 59.0') SAND, fine, trace silt, trace granules to coarse pebbles, subangular; moist; well sorted; grayish brown (10YR 5/2).		
60	-60	8	57.0-67.0'	10.0	0.1			(59.0 - 62.0') SILT and CLAY, low plasticity, no dilatancy, little fine sand, trace granules to small pebbles, subangular; moist; stiff; dark gray (10YR 4/1).		
					0.1			(62.0 - 75.0') SANDSTONE, weathered, interbedded with shale; dark grayish brown (10YR 4/2).		
65	-65				0.1					
70	-70	9	67.0-72.0'	5.0	0.3			NOTE: VAP groundwater samples collected from 62' to 67' and 70' to 75' bgs.		
					0.4					
75	-75	10	72.0-75.0'	0.0	NA			NOTE: Hot rock melted bag.		
					NA					
								End of boring at 75' bgs.		



Remarks: bgs = below ground surface
 No staining observed



Date Start: 06/09/2016
Date Finish: 06/10/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.):
Water Level Finish (ft. btoc.):






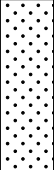
Northing: NA
Easting: NA
Casing Elevation: NA

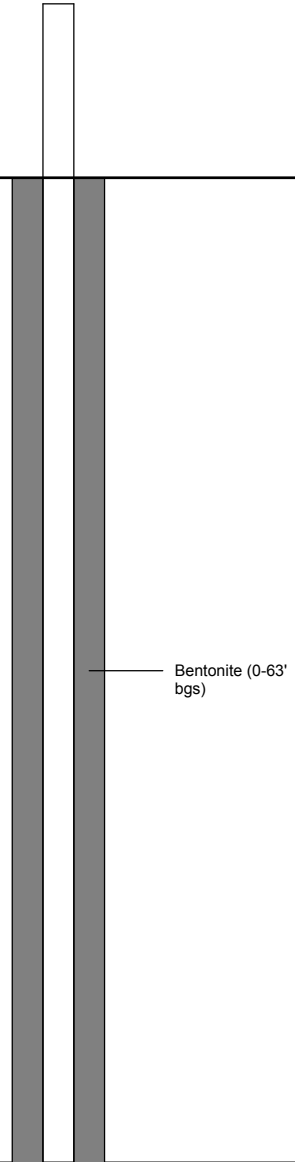
Borehole Depth (ft. bgs.): 72.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.3-PA125/MW-16-74
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Cloudy

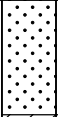
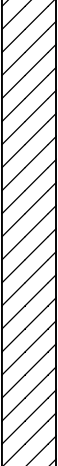
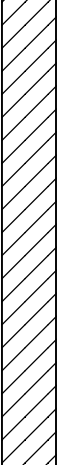
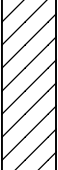
DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
		1	0.0-1.5'	NA				(0.0 - 1.5') CONCRETE		
					0.1			(1.5 - 5.5') SAND, fine to coarse, some granules to medium pebbles, subround; poorly sorted; wet; loose; brown (10YR 4/3). NOTE: Concrete from 3.5-4.5' bgs.		
-5	-5	2	1.5-7.0'	5.0	0.1			(5.5 - 7.0') CLAY, low to nonplastic, no dilatancy, little fine to medium sand; medium stiff; moist; very dark brown (10YR 2/2).		
					0.1			(7.0 - 14.0') SAND, fine to coarse, some granules to small pebbles, subround; poorly sorted; moist; loose; dark yellowish brown (10YR 4/6).		
-10	-10	3	7.0-17.0'	10.0	0.1			(14.0 - 19.0') SAND, fine, little silt, trace granules to large pebbles, subround; well sorted; moist; dark gray (10YR 4/1).		
-15	-15				0.1					



Remarks: bgs = below ground surface
 No odor or staining observed




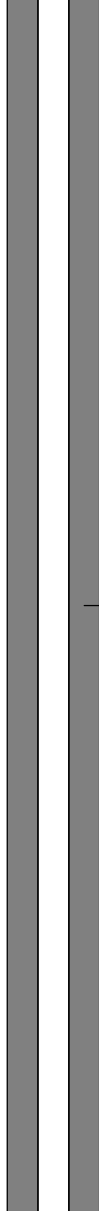











Date Start: 06/09/2016 Date Finish: 06/10/2016 Drilling Company: Cascade Driller's Name: Scott Parkes Drilling Method: Rotasonic Sampling Method: 4X6 Casing Rig Type: Rotasonic Water Level Start (ft. bgs.): Water Level Finish (ft. btoc.):	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 72.0 Surface Elevation: NA Descriptions By: Kaitlyn Voet	Well/Boring ID: SB-A5.3-PA125/MW-16-74 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 70 F, Cloudy
---	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
20	-20	4	17.0-27.0'	10.0	0.1			(19.0 - 39.0') CLAY, low plasticity, no dilatancy, little silt, trace fine sand, trace granules to medium pebbles; moist; medium stiff; dark grayish brown (10YR 4/2).		
25	-25				0.1					
30	-30	5	27.0-37.0'	10.0	0.1					Bentonite (0-63' bgs)
35	-35				0.1					2" PVC well casing (-3.0-66' bgs)

Remarks: bgs = below ground surface
No odor or staining observed



Date Start: 06/09/2016 Date Finish: 06/10/2016 Drilling Company: Cascade Driller's Name: Scott Parkes Drilling Method: Rotasonic Sampling Method: 4X6 Casing Rig Type: Rotasonic Water Level Start (ft. bgs.): Water Level Finish (ft. btoc.):	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 72.0 Surface Elevation: NA Descriptions By: Kaitlyn Voet	Well/Boring ID: SB-A5.3-PA125/MW-16-74 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 70 F, Cloudy
---	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
40	-40	6	37.0-47.0'	10.0				(39.0 - 47.0') SAND, fine to medium, trace granules to large pebbles; well sorted; moist; grayish brown (10YR 5/2).		
	0.1									
	0.1									
45	-45							0.1		
		7	47.0-57.0'	10.0				(47.0 - 48.0') SILT, some clay, trace granules to small pebbles, subangular, trace fine sand; moist; medium stiff; very dark grayish brown (10YR 3/2).		
	0.1									
	0.1									
50	-50							0.1		
								(48.0 - 49.0') SAND, fine, little silt, trace granules to medium pebbles, subangular.		
	0.1									
	0.1									
55	-55							(49.0 - 62.0') SILT, some clay, trace fine sand, trace granules to small cobbles, subround to subangular; dense; moist; very dark grayish brown (10YR 3/2). NOTE: till.		
										
										
										
										
										
										
										
										

Remarks: bgs = below ground surface
No odor or staining observed



Date Start: 06/09/2016
Date Finish: 06/10/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.):
Water Level Finish (ft. btoc.):

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 72.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.3-PA125/MW-16-74
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Cloudy

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
60	-60	8	57.0 67.0'	10.0	0.1			(62.0 - 72.0') SANDSTONE, heavily weathered, interbedded with shale; moist; white (10YR 8/1) to dark gray (10YR 4/1).		<p>Choker Sand (63-65' bgs)</p> <p>Filter Pack (65-72' bgs)</p> <p>2" stainless steel, 10 slot well screen (66-71' bgs)</p>
					0.1					
65	-65	9	67.0- 72.0'	5.0	0.2			NOTE: Color change to dark grayish brown (10YR 4/2) from 67-72' bgs. NOTE: VAP groundwater samples collected from 62' to 67' and 67' to 72' bgs.		
					0.1					
70	-70				0.1					
					0.2					
								End of boring at 72' bgs.		
75	-75									
80	-80									

Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/15/2016
Date Finish: 06/16/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA
Borehole Depth (ft. bgs.): 83.0
Surface Elevation:
Descriptions By: A. Villhauer/K. Voet

Well/Boring ID: SB-A5.3-PA147/MW-16-78
Client: RACER
Location: RACER Lansing Plant 2
Weather Conditions: 70 F, Sunny to Light Rain

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0.0					0.0					
30	-30				0.0			(30.0 - 30.5') SAND, fine; well sorted; saturated; brown (10YR 6/3).		
					0.0			(30.5 - 35.0') CLAY, high plasticity, trace silt, trace fine sand, trace granules to medium pebbles, angular; moist; soft; brown (10YR 4/3).		2" PVC well casing (-3-68' bgs)
35	-35	5	30.0-40.0'	7.0	0.0			(35.0 - 50.0') CLAY, low plasticity, some silt, trace fine sand, trace granules to large pebbles, subangular; moist; stiff; dark grayish brown (10YR 4/2).		
40	-40				0.0					
45	-45	6	40.0-50.0'	10.0	0.0					
					0.0					
					1.2			NOTE: Thin (<1 cm) silt seam present at 46' and 46.5' bgs.		
50	-50				0.0					
					0.9			(50.0 - 65.5') SILT, low to no plasticity, some clay, little fine sand, trace granules to small cobbles, subangular; moist; stiff; dark grayish brown (10YR 4/2).		
					0.9					
55	-55	7	50.0-60.0'	8.5	0.0					

Remarks: bgs = below ground surface
 No staining observed



Date Start: 06/15/2016
Date Finish: 06/16/2016
Drilling Company: Cascade
Driller's Name: D. Gordon
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing:
Easting:
Casing Elevation: NA
Borehole Depth (ft. bgs.): 83.0
Surface Elevation:
Descriptions By: A. Villhauer/K. Voet

Well/Boring ID: SB-A5.3-PA147/MW-16-78
Client: RACER
Location: RACER Lansing Plant 2
Weather Conditions: 70 F, Sunny to Light Rain

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headpace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
60	-60				0.0					
					0.9					
					0.0					
					0.9					
65	-65	8	60.0-70.0'	9.2	0.0			(65.5 - 68.0') SHALE, weathered; moist; soft; very dark brown (10YR 2/2).		Choker Sand (65-67' bgs)
					0.0					
					0.9					
					0.0			(68.0 - 81.0') SANDSTONE and SHALE, interbedded, fine, weathered; moist; dark gray (10YR 4/1).		
70	-70	9	70.0-73.0'	3.0	0.0	X				
					0.9					
					0.9			NOTE: VAP groundwater samples collected from 68' to 73' and 76' to 81' bgs.		Filter Pack (67-83' bgs) 2" stainless steel, 10 slot well screen (68-73' bgs)
					0.0					
75	-75				0.0					
					0.0					
		10	73.0-83.0'	6.0	0.0	X				
					0.0					
					0.0			NOTE: Becomes less weathered gradually at 80' bgs.		
80	-80				0.0					
					0.0			(81.0 - 83.0') SANDSTONE, very fine; moist; hard gray (10YR 5/1).		
					0.0					
					0.0			End of boring at 83' bgs.		
85	-85									

Remarks: bgs = below ground surface
 No staining observed



Date Start: 06/10/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA





Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 83.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.3-PV104/MW16-75
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
		1	0.0-1.0'	NA	NA			(0.0 - 1.0') CONCRETE		
		2	1.0-7.0'	3.0	0.1			(1.0 - 16.0') SAND, fine to coarse, trace granules to medium pebbles, subround to subangular; moist; poorly sorted; dark yellowish brown (10YR 4/6).		
-5	-5				0.6					
		3	7.0-17.0'	10.0	0.1					
-10	-10				0.1					
					0.0			(16.0 - 17.0') CLAY, medium to high plasticity, no dilatancy, trace silt; soft; moist; brown (10YR 4/3).		
-15	-15				0.1					
					0.0			(17.0 - 18.0') SAND, fine to coarse, little granules to medium pebbles, subangular to subround; moist; poorly sorted; dark yellowish brown (10YR 4/6).		



Remarks: bgs = below ground surface
 No odor or staining observed



Date Start: 06/10/2016 Date Finish: 06/13/2016 Drilling Company: Cascade Driller's Name: Scott Parkes Drilling Method: Rotosonic Sampling Method: 4X6 Casing Rig Type: Rotosonic Water Level Start (ft. bgs.): NA Water Level Finish (ft. btoc.): NA	Northing: NA Easting: NA Casing Elevation: NA Borehole Depth (ft. bgs.): 83.0 Surface Elevation: NA Descriptions By: Kaitlyn Voet	Well/Boring ID: SB-A5.3-PV104/MW16-75 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: 70 F, Sunny
---	--	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction		
20	-20	4	17.0-27.0'	7.0	0.0			(18.0 - 26.0') CLAY, low plasticity, no dilatancy, little silt, trace small to large pebbles; medium stiff; moist; dark gray (10YR 4/1).				
					0.0							
25	-25				0.0			(26.0 - 26.5') SAND, medium, trace granules to small pebbles; well sorted; wet; dark yellowish brown (10YR 4/4).				
					0.0			(26.5 - 29.0') SAND, fine; well sorted; wet; dark gray (10YR 4/1).				
30	-30	5	27.0-37.0'	10.0	0.0			(29.0 - 35.0') CLAY, medium plasticity, no dilatancy, little silt, trace small pebbles to coarse gravel, subround; moist, very dark grayish brown (10YR 3/2).		Bentonite (0-63' bgs)		
					0.1							
35	-35				0.1					(35.0 - 39.0') SAND, fine, trace silt; well sorted; moist; dark gray (10YR 4/1).		2" PVC well casing (-3.0-66' bgs)
					0.1					(39.0 - 48.0') SAND, very fine; well sorted; moist; gray (10YR 6/1).		

Remarks: bgs = below ground surface
No odor or staining observed



Date Start: 06/10/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Eastings: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 83.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.3-PV104/MW16-75
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
45	-45	6	37.0-47.0'	10.0	0.1					
50	-50	7	47.0-57.0'	10.0	0.1			(48.0 - 62.0') SILT, low plasticity, no dilatancy, some clay, little fine sand; moist; very dark gray (10YR 3/1).		
55	-55				0.1			NOTE: Large cobbles present in till, subround to round from 51-54' bgs.		Bentonite (0-63' bgs)
60	-60				0.1					

Remarks: bgs = below ground surface
No odor or staining observed



Date Start: 06/10/2016
Date Finish: 06/13/2016
Drilling Company: Cascade
Driller's Name: Scott Parkes
Drilling Method: Rotosonic
Sampling Method: 4X6 Casing
Rig Type: Rotosonic
Water Level Start (ft. bgs.): NA
Water Level Finish (ft. btoc.): NA

Northing: NA
Easting: NA
Casing Elevation: NA

Borehole Depth (ft. bgs.): 83.0
Surface Elevation: NA

Descriptions By: Kaitlyn Voet

Well/Boring ID: SB-A5.3-PV104/MW16-75
Client: RACER
Location: RACER Lansing Plant 2

Weather Conditions: 70 F, Sunny

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
65 - 65		8	57.0-67.0'	NA	0.9		[Geologic Column Pattern]	(62.0 - 83.0') SANDSTONE, heavily weathered, interbedded with shale; dark grayish brown (10YR 4/2).		<p>Choker Sand (63-65' bgs)</p> <p>Filter Pack (65-83' bgs)</p> <p>2" stainless steel, 10 slot well screen (66-71' bgs)</p>
70 - 70		9	67.0-75.0'	1.0	NA		[Geologic Column Pattern]	NOTE: VAP groundwater samples collected from 62' to 67', 70' to 75' and 78' to 83' bgs.		
75 - 75					NA		[Geologic Column Pattern]			
80 - 80		10	75.0-83.0'	0.5	NA		[Geologic Column Pattern]			
End of boring at 83' bgs.										

Remarks: bgs = below ground surface
 No odor or staining observed



APPENDIX C

Cascade Technical Services Analytical Reports and QA/QC Summary





CASCADE

DRILLING | TECHNICAL SERVICES

CLIENT: Arcadis

SITE: Arcadis Lansing MI

PROJECT NUMBER: 205166832

SAMPLE DELIVERY GROUP: 1

ANALYSIS DATES: June 7 - 10, 2016

REPORT DATE: June 29, 2016 – REVISION 1



FINAL ANALYTICAL DATA REPORT

Prepared for:

Jesse Wright
Arcadis
132 E. Washington St., Suite 600
Indianapolis, IN 46204
317.236.2860
jesse.wright@arcadis.com

Prepared by:

Morgan Greenwald
Cascade Technical Services
1 Home Farm Way
Montpelier, VT 05602
802.229.2197
mgreenwald@cascade-env.com

TABLE OF CONTENTS	PAGE
CASE NARRATIVE.....	3
SAMPLE LOGIN SUMMARY	10
Sample Login Summary.....	11
Sample Weights and Percent Moisture Summary.....	13
Chain of Custody (COC) Records	15
LABORATORY ANALYTICAL RESULTS.....	20



CASE NARRATIVE – REVISION 1

June 29, 2016

This data package presents the analytical results for soil and groundwater samples analyzed by Cascade Technical Services (Cascade) Mobilab Unit 2 located in Lansing, MI. Samples in this sample delivery group (SDG-1) were collected at the Arcadis Lansing Site between June 6 and 10, 2016 and analyzed between June 7 and 10, 2016. A total of 67 soil samples and 15 groundwater samples were collected during this period by Arcadis personnel from 7 locations (SB-A5.2-0B134, SB-A5.2-0E130, SB-A5.2-NQ140, SB-A5.2-NV137, SB-A5.3-00141, SB-A5.3-PA125 and SB-A5.3-PV104). Groundwater samples were collected in 40-ml VOA vials with zero headspace. For each soil sample, approximately 10 grams of soil were preserved in 10 ml methanol in 40-ml VOA vials.

Samples were received by Cascade mobile laboratory staff between June 6 and 10, 2016. All samples were recorded on a Sample Log Sheet upon receipt and then samples were logged into Cascade's laboratory information management system (LIMS). A scanned copy of the Sample Log Sheet as well as a summary of samples logged into Cascade's LIMS is included in the Sample Login Summary Section of this report. In addition, sample weight and percent moisture data for soil samples are provided in this section.

Samples were analyzed by EPA SW846 Method 8260C (gas chromatography / mass spectrometry (GC/MS)) set in selective ion monitoring (SIM) / scan mode for 20 target volatile organic compounds (VOCs) in accordance with Cascade's Standard Operating Procedure (SOP) CTS-10.15.14, "The Determination of Volatile Organic Compounds By GC/MS (SW846 USEPA Method 8260C)". Soil samples were analyzed at a default dilution factor of 40x. Percent moisture (%M) correction was performed on the soil sample results; all soil sample results are reported in units of ug/kg on a dry weight basis.

Cascade's Mobilab is accredited for Method 8260C (GC/MS) under the National Environmental Laboratory Accreditation Program (NELAP) fields of testing. Mobilab's Method 8260C is also accredited under the National Environmental Field Activities Program (NEFAP) / ISO 17025. The associated accreditation certificates are included after the narrative. The analytical results associated with the samples presented in this report were generated under a quality system that

adheres to requirements specified in the NELAP / NEFAP standards. All manual integrations have been checked by the secondary reviewer. All QA/QC results associated with these data were found to be within the tolerances set forth in SOP CTS-10.15.14 and NELAP / NEFAP standards. Any exceptions are noted below:

- Sample Extraction Deficiencies:
 - The following soil sample vials broke during the extraction process and the remaining contents were transferred to another vial prior to analysis: SB-A5.2-NQ140-15.0, SB-A5.2-NQ140-39.0, and SB-A5.2-NQ140-48.0. Since the amount of soil and methanol lost could be quantified, all results for these samples were qualified as estimated (J/UJ).
- Initial Calibration (ICAL) Deficiencies:
 - SOP CTS-10.15.14 specifies a minimum coefficient of determination (r^2) of 0.990 for quadratic regression calibration fits. These minima were not achieved for the quadratic regression calibrations of 1,2,4-trichlorobenzene ($r^2 = 0.974$) and naphthalene ($r^2 = 0.986$) in ICAL QZ60607_166832 performed on June 7, 2016. Therefore, all results reported for these compounds from ICAL QZ60607_166832 were flagged with the Q qualifier.
- Initial Calibration Verification (ICV) Sample Deficiencies:
 - No deficiencies.
- Continuing Calibration Verification (CCV) Deficiencies:
 - Carbon disulfide percent difference (%D) values were outside the acceptance limits of $\pm 20\%$ in CCV GD/GE (-21.7%D) analyzed on June 8 and CCV GK/GL (-31.7%D) analyzed on June 10, 2016. These values indicate a low bias for carbon disulfide in the affected analytical batches; therefore, all results for this compound reported from the affected analytical batches were qualified (Q/UQ).
 - 1,2,4-trichlorobenzene %D value was outside the acceptance limits of $\pm 20\%$ in CCV GI/GJ (-25.75%D) analyzed on June 9, 2016. This value indicates a low bias for 1,2,4-trichlorobenzene in the affected analytical batch; therefore, all results for this compound reported from the affected analytical batch were qualified (Q/UQ).
- VBLK Deficiencies:
 - No deficiencies.
- LCS Deficiencies:

-
- Carbon disulfide recovery was low (68.3%) in water LCS GK analyzed on June 10, 2016. This indicates a low bias for carbon disulfide in the affected analytical batch; therefore, all results for this compound reported from the affected analytical batch were qualified (Q/UQ).
 - Matrix Spike / Matrix Spike Duplicate (MS/MSD) Sample Deficiencies:
 - No MS/MSD samples were submitted for analysis.
 - Field Duplicate (FD) Sample Deficiencies:
 - No FD samples were submitted for analysis.
 - Internal Standard (IS) and Surrogate Standard (SS) Deficiencies:
 - No deficiencies.

When applicable, the final results were annotated with the following codes:

- U - Analyte was not detected and is reported as less than the reported quantitation limit.
- J - The reported result is an estimated value (e.g., matrix interference was observed or the analyte was positively identified, but the associated numerical value is between the method detection limit and reporting limit).
- Q - One or more quality control criteria failed (e.g., LCS recovery, surrogate spike recovery or CCV)
- B - Blank contamination. The recorded result is associated with a contaminated blank.
- E - Estimated value, marginally above the calibration levels.

I certify that the data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Signature: _____

Morgan Greenwald, Laboratory QA Manager, Cascade Technical Services

**NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER**



Expires 12:01 AM April 01, 2017
Issued April 01, 2016
Revised May 13, 2016

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. MICHAEL ROSSI
CASCADE TECHNICAL SERVICES VERMONT. - MOBILE
UNIT #2
1 HOME FARM WAY
MONTPELIER, VT 05602

NY Lab Id No: 12004

*is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2003) for the category
ENVIRONMENTAL ANALYSES NON POTABLE WATER*

All approved analytes are listed below:

Fuel Oxygenates

Methyl tert-butyl ether EPA 8260C

Volatile Aromatics

1,2,4-Trichlorobenzene, Volatile EPA 8260C
1,2,4-Trimethylbenzene EPA 8260C
1,2-Dichlorobenzene EPA 8260C
1,3,5-Trimethylbenzene EPA 8260C
1,3-Dichlorobenzene EPA 8260C
1,4-Dichlorobenzene EPA 8260C
Benzene EPA 8260C
Chlorobenzene EPA 8260C
Ethyl benzene EPA 8260C
Isopropylbenzene EPA 8260C
Naphthalene, Volatile EPA 8260C
Styrene EPA 8260C
Toluene EPA 8260C
Total Xylenes EPA 8260C

Volatile Halocarbons

1,1,1-Trichloroethane EPA 8260C
1,1,1,2-Tetrachloroethane EPA 8260C
1,1,2-Trichloro-1,2,2-Trifluoroethane EPA 8260C
1,1,2-Trichloroethane EPA 8260C
1,1-Dichloroethane EPA 8260C
1,1-Dichloroethene EPA 8260C
1,2-Dibromo-3-chloropropane EPA 8260C
1,2-Dibromoethane EPA 8260C

Volatile Halocarbons

1,2-Dichloroethane EPA 8260C
1,2-Dichloropropane EPA 8260C
Bromodichloromethane EPA 8260C
Bromoform EPA 8260C
Carbon tetrachloride EPA 8260C
Chloroethane EPA 8260C
Chloroform EPA 8260C
Chloromethane EPA 8260C
cis-1,2-Dichloroethene EPA 8260C
cis-1,3-Dichloropropane EPA 8260C
Dibromochloromethane EPA 8260C
Methylene chloride EPA 8260C
Tetrachloroethene EPA 8260C
trans-1,2-Dichloroethene EPA 8260C
trans-1,3-Dichloropropane EPA 8260C
Trichloroethene EPA 8260C
Vinyl chloride EPA 8260C

Volatiles Organics

1,4-Dioxane EPA 8260C
Carbon Disulfide EPA 8260C

Sample Preparation Methods

ASTM D6520-00

Serial No.: 54800

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.



NEW YORK STATE DEPARTMENT OF HEALTH
WADSWORTH CENTER



Expires 12:01 AM April 01, 2017
Issued April 01, 2016
Revised May 13, 2016

CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

Issued in accordance with and pursuant to section 502 Public Health Law of New York State

MR. MICHAEL ROSSI
CASCADE TECHNICAL SERVICES VERMONT. - MOBILE
UNIT #2
1 HOME FARM WAY
MONTPELIER, VT 05602

NY Lab Id No: 12004

*is hereby APPROVED as an Environmental Laboratory in conformance with the
National Environmental Laboratory Accreditation Conference Standards (2003) for the category
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE
All approved analytes are listed below:*

Volatile Aromatics

1,2,4-Trichlorobenzene, Volatile	EPA 8260C
1,2,4-Trimethylbenzene	EPA 8260C
1,2-Dichlorobenzene	EPA 8260C
1,3,5-Trimethylbenzene	EPA 8260C
1,3-Dichlorobenzene	EPA 8260C
1,4-Dichlorobenzene	EPA 8260C
Benzene	EPA 8260C
Chlorobenzene	EPA 8260C
Ethyl benzene	EPA 8260C
Isopropylbenzene	EPA 8260C
Naphthalene, Volatile	EPA 8260C
Styrene	EPA 8260C
Toluene	EPA 8260C
Total Xylenes	EPA 8260C

Volatile Halocarbons

1,1,1-Trichloroethane	EPA 8260C
1,1,1,2-Tetrachloroethane	EPA 8260C
1,1,2-Trichloro-1,2,2-Trifluoroethane	EPA 8260C
1,1,2-Trichloroethane	EPA 8260C
1,1-Dichloroethane	EPA 8260C
1,1-Dichloroethene	EPA 8260C
1,2-Dibromo-3-chloropropane	EPA 8260C
1,2-Dibromoethane	EPA 8260C
1,2-Dichloroethane	EPA 8260C
1,2-Dichloropropane	EPA 8260C

Volatile Halocarbons

Bromodichloromethane	EPA 8260C
Bromoform	EPA 8260C
Carbon tetrachloride	EPA 8260C
Chloroethane	EPA 8260C
Chloroform	EPA 8260C
Chloromethane	EPA 8260C
cis-1,2-Dichloroethene	EPA 8260C
cis-1,3-Dichloropropene	EPA 8260C
Dibromochloromethane	EPA 8260C
Methylene chloride	EPA 8260C
Tetrachloroethene	EPA 8260C
trans-1,2-Dichloroethene	EPA 8260C
trans-1,3-Dichloropropene	EPA 8260C
Trichloroethene	EPA 8260C
Vinyl chloride	EPA 8260C

Volatile Organics

1,4-Dioxane	EPA 8260C
Carbon Disulfide	EPA 8260C
Methyl tert-butyl ether	EPA 8260C

Sample Preparation Methods

EPA 5035A-H/ASTM D6520-00

Serial No.: 54801

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.





PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Organization of:

Cascade Technical Services- Vermont.

1 Home Farm Way, Montpelier, VT 05602

and hereby declares that Organization has met the requirements of ISO/IEC 17025:2005 “General Requirements for the Competence of Testing and Calibration Laboratories” and the Field Sampling and Measurement Organization Sector Volume 1 “General Requirements for Field Sampling and Measurement Organizations” (FSMO-VI-2007) and is accredited in accordance with the:

TNI National Environmental Field Activities Program (NEFAP)

*This accreditation demonstrates the technical competence for the defined scope:
Environmental Field Sampling and Measurement
(As detailed in the supplement)*

Accreditation claims for such activities shall only be made from the addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation Body’s duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President/Operations Manager

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation Date:

February 25, 2013

Issue Date:

October 1, 2014

Expiration Date:

January 31, 2017

Accreditation No.:

74140

Certificate No.:

L14-302

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjilabs.com



Certificate of Accreditation: Supplement

TNI National Environmental Field Activities Program (NEFAP)

Cascade Technical Services-Vermont

1 Home Farm Way, Montpelier, VT 05602
Morgan Greenwald Phone: 802-229-2197

Accreditation is granted to the facility to perform the following field sampling:

FIELD OF SAMPLING/TEST	ITEMS, MATERIALS OR PRODUCTS SAMPLED/TESTED	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED	RANGE (WHERE APPROPRIATE) AND DETECTION LIMIT
Groundwater Sampling-Waterloo Profiling ^{FO}	Groundwater	N/A	SEI-SOP-6.43.3 Ground water Profiling and K-Pro Testing	N/A
Troll 9000/9500-Multiparameter Water Quality Sonde ^{FO}		pH, Temperature, Specific Conductance, ORP, Dissolved Oxygen	SEI-SOP-5.25.1 Use, Maintenance, and Calibration of the Multiparameter Troll 9000 and 9500	Physiochemical to support Waterloo and MIP field work
Hydrolab MS5-Multiparameter Water Quality Sonde ^{FO}			SEI-SOP-5.27.1 Use, Maintenance, and Calibration of the Hydrolab MS5 Water Quality Multiprobes	
YSI 699xl-Multiparameter Water Quality Sonde ^{FO}			SEI-SOP-5.30.2 Use, Calibration and Maintenance of the YSI Model 699xl Multiparameter Water Quality Monitoring System	
Membrane Interface Probe (MIP) ^{FO}	Subsurface	Organics	SEI-SOP-10.12.2 Use, Calibration, and Maintenance of the Membrane Interface Probe (MIP)	N/A
Determination of Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS) ^{FO}	Groundwater	Organics Prep method ASTM D6520-06	SW846 USEPA Method 8260C (SEI-SOP- 10.15.11: The Determination of Volatile Organic Compounds by Gas Chromatography/ Mass Spectrometry (GC/MS))	LOQ Range = 1 ppb to 200 ppb (LOD Range = 0.5 ppb to 1 ppb)
	Soil, Rock, Waste	Organics Prep method EPA 5035/ ASTM D6520-06		LOQ Range = 40 ppb to 8 000 ppb (LOD Range = 20 ppb to 40 ppb)

- The presence of a superscript FO means that the laboratory performs testing of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer ^{FO} would mean that the laboratory performs this testing at its fixed location and onsite at customer locations.

SAMPLE LOGIN SUMMARY

Sample Login Summary

Sample Weights and Percent Moisture Summary

Chain of Custody (COC) Records

205166832: Arcadis Lansing MI
Sample Login Summary - SDG-1

Lab ID	Location ID	Depth	Matrix	Sample Name	Sample Code	Quantity	Collected By	Collected Date	Collected Time	Collection Method	Received By	Received Date	Received Time	Comments
SEI-1	SB-A5.2-0E130	064.00	Soil	SB-A5.2-0E130-64.0	Normal Sample	1	KV	6/6/2016	4:15:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-2	SB-A5.2-0E130	053.00	Soil	SB-A5.2-0E130-53.0	Normal Sample	1	KV	6/6/2016	3:38:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-3	SB-A5.2-0E130	047.00	Soil	SB-A5.2-0E130-47.0	Normal Sample	1	KV	6/6/2016	3:24:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-4	SB-A5.2-0E130	002.00	Soil	SB-A5.2-0E130-2.0	Normal Sample	1	KV	6/6/2016	11:20:00 AM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-5	SB-A5.2-0E130	033.00	Soil	SB-A5.2-0E130-33.0	Normal Sample	1	KV	6/6/2016	2:39:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-6	SB-A5.2-0E130	037.00	Soil	SB-A5.2-0E130-37.0	Normal Sample	1	KV	6/6/2016	2:49:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-7	SB-A5.2-0E130	009.00	Soil	SB-A5.2-0E130-9.0	Normal Sample	1	KV	6/6/2016	11:25:00 AM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-8	SB-A5.2-0E130	005.00	Soil	SB-A5.2-0E130-5.0	Normal Sample	1	KV	6/6/2016	11:23:00 AM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-9	SB-A5.2-0E130	041.00	Soil	SB-A5.2-0E130-41.0	Normal Sample	1	KV	6/6/2016	3:15:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-10	SB-A5.2-0E130	061.00	Soil	SB-A5.2-0E130-61.0	Normal Sample	1	KV	6/6/2016	4:00:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-11	SB-A5.2-0E130	056.00	Soil	SB-A5.2-0E130-56.0	Normal Sample	1	KV	6/6/2016	3:51:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-12	SB-A5.2-0E130	028.00	Soil	SB-A5.2-0E130-28.0	Normal Sample	1	KV	6/6/2016	2:19:00 PM	Grab	dj	6/6/2016	5:00:00 PM	
SEI-13	SB-A5.2-0E130-GW	065.00	GW	SB-A5.2-0E130-65.0-70.0	Normal Sample	2	KV	6/7/2016	9:50:00 AM	Grab	dj	6/7/2016	10:45:00 AM	
SEI-14	SB-A5.2-0E130-GW	070.00	GW	SB-A5.2-0E130-70.0-75.0	Normal Sample	2	KV	6/7/2016	10:55:00 AM	Grab	dj	6/7/2016	11:10:00 AM	
SEI-15	SB-A5.2-0B134	011.00	Soil	SB-A5.2-0B134-11.0	Normal Sample	1	KV	6/7/2016	1:43:00 PM	Grab	dj	6/7/2016	3:30:00 PM	
SEI-16	SB-A5.2-0B134	052.50	Soil	SB-A5.2-0B134-52.5	Normal Sample	1	KV	6/7/2016	3:43:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-17	SB-A5.2-0B134	058.00	Soil	SB-A5.2-0B134-58.0	Normal Sample	1	KV	6/7/2016	4:08:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-18	SB-A5.2-0B134	001.00	Soil	SB-A5.2-0B134-1.0	Normal Sample	1	KV	6/7/2016	1:22:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-19	SB-A5.2-0B134	004.00	Soil	SB-A5.2-0B134-4.0	Normal Sample	1	KV	6/7/2016	1:22:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-20	SB-A5.2-0B134	007.00	Soil	SB-A5.2-0B134-7.0	Normal Sample	1	KV	6/7/2016	1:22:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-21	SB-A5.2-0B134	026.00	Soil	SB-A5.2-0B134-26.0	Normal Sample	1	KV	6/7/2016	2:43:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-22	SB-A5.2-0B134	029.00	Soil	SB-A5.2-0B134-29.0	Normal Sample	1	KV	6/7/2016	2:46:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-23	SB-A5.2-0B134	032.00	Soil	SB-A5.2-0B134-32.0	Normal Sample	1	KV	6/7/2016	2:50:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-24	SB-A5.2-0B134	035.00	Soil	SB-A5.2-0B134-35.0	Normal Sample	1	KV	6/7/2016	2:52:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-25	SB-A5.2-0B134	038.00	Soil	SB-A5.2-0B134-38.0	Normal Sample	1	KV	6/7/2016	3:10:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-26	SB-A5.2-0B134	046.00	Soil	SB-A5.2-0B134-46.0	Normal Sample	1	KV	6/7/2016	3:33:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-27	SB-A5.2-0B134	050.00	Soil	SB-A5.2-0B134-50.0	Normal Sample	1	KV	6/7/2016	3:38:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-28	SB-A5.2-0B134	055.00	Soil	SB-A5.2-0B134-55.0	Normal Sample	1	KV	6/7/2016	3:43:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-29	SB-A5.2-0B134	061.00	Soil	SB-A5.2-0B134-61.0	Normal Sample	1	KV	6/7/2016	4:30:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-30	SB-A5.2-0B134	064.00	Soil	SB-A5.2-0B134-64.0	Normal Sample	1	KV	6/7/2016	4:30:00 PM	Grab	dj	6/7/2016	5:00:00 PM	
SEI-31	SB-A5.2-0B134-GW	065.00	GW	SB-A5.2-0B134-65.0-70.0	Normal Sample	2	KV	6/8/2016	9:15:00 AM	Grab	dj	6/8/2016	9:34:00 AM	
SEI-32	SB-A5.2-0B134-GW	070.00	GW	SB-A5.2-0B134-70.0-75.0	Normal Sample	2	kv	6/8/2016	10:07:00 AM	Grab	dj	6/8/2016	10:15:00 AM	
SEI-33	SB-A5.2-NV137	004.50	Soil	SB-A5.2-NV137-4.5	Normal Sample	1	KV	6/8/2016	12:08:00 PM	Grab	dj	6/8/2016	1:00:00 PM	
SEI-34	SB-A5.2-NV137	008.00	Soil	SB-A5.2-NV137-8.0	Normal Sample	1	KV	6/8/2016	12:15:00 PM	Grab	dj	6/8/2016	1:00:00 PM	
SEI-35	SB-A5.2-NV137	011.00	Soil	SB-A5.2-NV137-11.0	Normal Sample	1	KV	6/8/2016	12:34:00 PM	Grab	dj	6/8/2016	1:00:00 PM	
SEI-36	SB-A5.2-NV137	014.00	Soil	SB-A5.2-NV137-14.0	Normal Sample	1	KV	6/8/2016	12:39:00 PM	Grab	dj	6/8/2016	1:00:00 PM	
SEI-37	SB-A5.2-NV137	017.00	Soil	SB-A5.2-NV137-17.0	Normal Sample	1	KV	6/8/2016	12:54:00 PM	Grab	dj	6/8/2016	1:00:00 PM	
SEI-38	SB-A5.2-NV137	020.00	Soil	SB-A5.2-NV137-20.0	Normal Sample	1	KV	6/8/2016	1:05:00 PM	Grab	dj	6/8/2016	2:00:00 PM	
SEI-39	SB-A5.2-NV137	023.00	Soil	SB-A5.2-NV137-23.0	Normal Sample	1	KV	6/8/2016	1:14:00 PM	Grab	dj	6/8/2016	2:00:00 PM	
SEI-40	SB-A5.2-NV137	026.00	Soil	SB-A5.2-NV137-26.0	Normal Sample	1	KV	6/8/2016	1:27:00 PM	Grab	dj	6/8/2016	2:00:00 PM	
SEI-41	SB-A5.2-NV137	029.00	Soil	SB-A5.2-NV137-29.0	Normal Sample	1	KV	6/8/2016	1:30:00 PM	Grab	dj	6/8/2016	2:00:00 PM	
SEI-42	SB-A5.2-NV137	032.00	Soil	SB-A5.2-NV137-32.0	Normal Sample	1	KV	6/8/2016	1:45:00 PM	Grab	dj	6/8/2016	3:20:00 PM	
SEI-43	SB-A5.2-NV137	036.00	Soil	SB-A5.2-NV137-36.0	Normal Sample	1	KV	6/8/2016	1:55:00 PM	Grab	dj	6/8/2016	3:20:00 PM	
SEI-44	SB-A5.2-NV137	039.00	Soil	SB-A5.2-NV137-39.0	Normal Sample	1	KV	6/8/2016	2:01:00 PM	Grab	dj	6/8/2016	3:20:00 PM	
SEI-45	SB-A5.2-NV137	042.00	Soil	SB-A5.2-NV137-42.0	Normal Sample	1	KV	6/8/2016	2:09:00 PM	Grab	dj	6/8/2016	3:20:00 PM	
SEI-46	SB-A5.2-NV137	045.00	Soil	SB-A5.2-NV137-45.0	Normal Sample	1	KV	6/8/2016	2:22:00 PM	Grab	dj	6/8/2016	3:20:00 PM	
SEI-47	SB-A5.2-NV137	048.00	Soil	SB-A5.2-NV137-48.0	Normal Sample	1	KV	6/8/2016	2:25:00 PM	Grab	dj	6/8/2016	3:20:00 PM	
SEI-48	SB-A5.2-NV137	055.00	Soil	SB-A5.2-NV137-55.0	Normal Sample	1	kv	6/8/2016	5:23:00 PM	Grab	dj	6/8/2016	5:50:00 PM	
SEI-49	SB-A5.2-NV137	058.00	Soil	SB-A5.2-NV137-58.0	Normal Sample	1	kv	6/8/2016	5:26:00 PM	Grab	dj	6/8/2016	5:50:00 PM	
SEI-50	SB-A5.2-NV137-GW	060.00	GW	SB-A5.2-NV137-60.0-65.0	Normal Sample	2	KV	6/8/2016	6:00:00 PM	Grab	dj	6/9/2016	9:00:00 AM	
SEI-51	SB-A5.2-NV137-GW	065.00	GW	SB-A5.2-NV137-65.0-70.0	Normal Sample	2	AV	6/9/2016	11:40:00 AM	Grab	dj	6/9/2016	11:45:00 AM	

205166832: Arcadis Lansing MI
Sample Login Summary - SDG-1

Lab ID	Location ID	Depth	Matrix	Sample Name	Sample Code	Quantity	Collected By	Collected Date	Collected Time	Collection Method	Received By	Received Date	Received Time	Comments
SEI-52	SB-A5.3-00141-GW	058.00	GW	SB-A5.3-00141-58.0-63.0	Normal Sample	2	kv	6/9/2016	11:35:00 AM	Grab	dj	6/9/2016	11:45:00 AM	
SEI-53	SB-A5.3-00141-GW	063.00	GW	SB-A5.3-00141-63.0-68.0	Normal Sample	2	kv	6/9/2016	12:53:00 PM	Grab	dj	6/9/2016	1:00:00 PM	
SEI-54	SB-A5.2-NQ140	001.00	Soil	SB-A5.2-NQ140-1.0	Normal Sample	1	AV	6/9/2016	1:40:00 PM	Grab	dj	6/9/2016	2:25:00 PM	
SEI-55	SB-A5.2-NQ140	004.00	Soil	SB-A5.2-NQ140-4.0	Normal Sample	1	AV	6/9/2016	1:42:00 PM	Grab	dj	6/9/2016	2:25:00 PM	
SEI-56	SB-A5.2-NQ140	006.00	Soil	SB-A5.2-NQ140-6.0	Normal Sample	1	AV	6/9/2016	1:52:00 PM	Grab	dj	6/9/2016	2:25:00 PM	
SEI-57	SB-A5.2-NQ140	009.00	Soil	SB-A5.2-NQ140-9.0	Normal Sample	1	AV	6/9/2016	1:55:00 PM	Grab	dj	6/9/2016	2:25:00 PM	
SEI-58	SB-A5.2-NQ140	013.50	Soil	SB-A5.2-NQ140-13.5	Normal Sample	1	AV	6/9/2016	2:10:00 PM	Grab	dj	6/9/2016	2:25:00 PM	
SEI-59	SB-A5.2-NQ140	015.00	Soil	SB-A5.2-NQ140-15.0	Normal Sample	1	AV	6/9/2016	2:13:00 PM	Grab	dj	6/9/2016	2:25:00 PM	
SEI-60	SB-A5.2-NQ140	018.00	Soil	SB-A5.2-NQ140-18.0	Normal Sample	1	AV	6/9/2016	2:15:00 PM	Grab	dj	6/9/2016	2:55:00 PM	
SEI-61	SB-A5.2-NQ140	021.00	Soil	SB-A5.2-NQ140-21.0	Normal Sample	1	AV	6/9/2016	2:27:00 PM	Grab	dj	6/9/2016	2:55:00 PM	
SEI-62	SB-A5.2-NQ140	024.00	Soil	SB-A5.2-NQ140-24.0	Normal Sample	1	AV	6/9/2016	2:30:00 PM	Grab	dj	6/9/2016	2:55:00 PM	
SEI-63	SB-A5.2-NQ140	027.00	Soil	SB-A5.2-NQ140-27.0	Normal Sample	1	AV	6/9/2016	2:32:00 PM	Grab	dj	6/9/2016	2:55:00 PM	
SEI-64	SB-A5.2-NQ140	030.00	Soil	SB-A5.2-NQ140-30.0	Normal Sample	1	AV	6/9/2016	2:42:00 PM	Grab	dj	6/9/2016	2:55:00 PM	
SEI-65	SB-A5.2-NQ140	033.00	Soil	SB-A5.2-NQ140-33.0	Normal Sample	1	AV	6/9/2016	2:45:00 PM	Grab	dj	6/9/2016	2:55:00 PM	
SEI-66	SB-A5.2-NQ140	036.00	Soil	SB-A5.2-NQ140-36.0	Normal Sample	1	AV	6/9/2016	2:50:00 PM	Grab	dj	6/9/2016	2:55:00 PM	
SEI-67	SB-A5.2-NQ140	039.00	Soil	SB-A5.2-NQ140-39.0	Normal Sample	1	AV	6/9/2016	2:53:00 PM	Grab	dj	6/9/2016	2:55:00 PM	
SEI-68	SB-A5.3-PA125-GW	062.00	GW	SB-A5.3-PA125-62.0-67.0	Normal Sample	2	KV	6/9/2016	4:00:00 PM	Grab	dj	6/9/2016	4:20:00 PM	
SEI-69	SB-A5.2-NQ140	042.00	Soil	SB-A5.2-NQ140-42.0	Normal Sample	1	AV	6/9/2016	3:05:00 PM	Grab	DJ	6/10/2016	8:00:00 AM	Sample was left in cooler overnight and was received the following morning.
SEI-70	SB-A5.2-NQ140	045.00	Soil	SB-A5.2-NQ140-45.0	Normal Sample	1	AV	6/9/2016	3:10:00 PM	Grab	DJ	6/10/2016	8:00:00 AM	Sample was left in cooler overnight and was received the following morning.
SEI-71	SB-A5.2-NQ140	048.00	Soil	SB-A5.2-NQ140-48.0	Normal Sample	1	AV	6/9/2016	3:12:00 PM	Grab	DJ	6/10/2016	8:00:00 AM	Sample was left in cooler overnight and was received the following morning.
SEI-72	SB-A5.3-PA125-GW	067.00	GW	SB-A5.3-PA125-67.0-72.0	Normal Sample	2	kV	6/10/2016	8:37:00 AM	Grab	DJ	6/10/2016	8:45:00 AM	
SEI-73	SB-A5.2-NQ140	052.00	Soil	SB-A5.2-NQ140-52.0	Normal Sample	1	AV	6/10/2016	9:30:00 AM	Grab	DJ	6/10/2016	10:00:00 AM	
SEI-74	SB-A5.2-NQ140	055.00	Soil	SB-A5.2-NQ140-55.0	Normal Sample	1	AV	6/10/2016	9:40:00 AM	Grab	DJ	6/10/2016	10:00:00 AM	
SEI-75	SB-A5.2-NQ140	059.00	Soil	SB-A5.2-NQ140-59.0	Normal Sample	1	AV	6/10/2016	9:45:00 AM	Grab	DJ	6/10/2016	10:00:00 AM	
SEI-76	SB-A5.2-NQ140	062.00	Soil	SB-A5.2-NQ140-62.0	Normal Sample	1	AV	6/10/2016	10:22:00 AM	Grab	DJ	6/10/2016	10:30:00 AM	
SEI-77	SB-A5.2-NQ140	064.00	Soil	SB-A5.2-NQ140-64.0	Normal Sample	1	AV	6/10/2016	10:30:00 AM	Grab	DJ	6/10/2016	10:30:00 AM	
SEI-78	SB-A5.2-NQ140-GW	065.00	GW	SB-A5.2-NQ140-65.0-70.0	Normal Sample	2	AV	6/10/2016	11:10:00 AM	Grab	DJ	6/10/2016	11:15:00 AM	
SEI-79	SB-A5.3-PV104-GW	062.00	GW	SB-A5.3-PV104-62.0-67.0	Normal Sample	2	KV	6/10/2016	12:38:00 PM	Grab	DJ	6/10/2016	1:00:00 PM	
SEI-80	SB-A5.2-NQ140-GW	073.00	GW	SB-A5.2-NQ140-73.0-78.0	Normal Sample	2	AV	6/10/2016	2:30:00 PM	Grab	DJ	6/10/2016	3:00:00 PM	
SEI-81	SB-A5.3-PV104-GW	070.00	GW	SB-A5.3-PV104-70.0-75.0	Normal Sample	2	KV	6/10/2016	2:15:00 PM	Grab	DJ	6/10/2016	3:20:00 PM	
SEI-82	SB-A5.3-PV104-GW	078.00	GW	SB-A5.3-PV104-78.0-83.0	Normal Sample	2	KV	6/10/2016	3:00:00 PM	Grab	DJ	6/10/2016	3:20:00 PM	

205166832: Arcadis Lansing MI
Sample Weight and Percent Moisture Summary - SDG-1

Lab ID	Sample Name	Container ID	Initial Mass (g)	Final Vial Mass (g)	Final Sample Weight (g)	Wet Mass (g)	Dry Mass (g)	% Moisture
SEI-1	SB-A5.2-0E130-64.0	063-VOC	36.46	50.30	13.84	14.41	12.76	11.45
SEI-2	SB-A5.2-0E130-53.0	060-VOC	36.70	49.73	13.03	12.02	11.10	7.65
SEI-3	SB-A5.2-0E130-47.0	059-VOC	36.45	49.48	13.03	16.66	15.91	4.50
SEI-4	SB-A5.2-0E130-2.0	051-VOC	36.62	51.51	14.89	15.52	13.08	15.72
SEI-5	SB-A5.2-0E130-33.0	055-VOC	36.47	48.90	12.43	11.20	10.12	9.64
SEI-6	SB-A5.2-0E130-37.0	056-VOC	36.41	48.72	12.31	12.23	10.92	10.71
SEI-7	SB-A5.2-0E130-9.0	053-VOC	36.36	49.48	13.12	10.29	8.67	15.74
SEI-8	SB-A5.2-0E130-5.0	052-VOC	36.45	49.41	12.96	16.20	13.75	15.12
SEI-9	SB-A5.2-0E130-41.0	057-VOC	36.38	50.19	13.81	15.39	13.57	11.83
SEI-10	SB-A5.2-0E130-61.0	062-VOC	36.61	46.84	10.23	9.46	7.79	17.65
SEI-11	SB-A5.2-0E130-56.0	061-VOC	36.89	49.34	12.45	11.11	9.06	18.45
SEI-12	SB-A5.2-0E130-28.0	054-VOC	36.83	50.13	13.30	10.99	9.95	9.46
SEI-15	SB-A5.2-0B134-11.0	066-VOC	36.75	51.36	14.61	13.14	11.39	13.32
SEI-16	SB-A5.2-0B134-52.5	075-VOC	37.46	52.69	15.23	11.66	10.50	9.95
SEI-17	SB-A5.2-0B134-58.0	076-VOC	36.98	51.52	14.54	18.67	17.63	5.57
SEI-18	SB-A5.2-0B134-1.0	058-VOC	36.71	52.01	15.30	14.36	12.62	12.12
SEI-19	SB-A5.2-0B134-4.0	064-VOC	36.45	51.39	14.94	13.60	11.62	14.56
SEI-20	SB-A5.2-0B134-7.0	065-VOC	36.78	53.61	16.83	13.48	10.84	19.58
SEI-21	SB-A5.2-0B134-26.0	067-VOC	36.53	50.94	14.41	13.79	11.58	16.03
SEI-22	SB-A5.2-0B134-29.0	068-VOC	37.57	51.21	13.64	16.80	14.99	10.77
SEI-23	SB-A5.2-0B134-32.0	069-VOC	36.87	51.88	15.01	11.50	10.32	10.26
SEI-24	SB-A5.2-0B134-35.0	070-VOC	37.55	52.96	15.41	15.92	14.38	9.67
SEI-25	SB-A5.2-0B134-38.0	071-VOC	36.71	50.07	13.36	13.06	11.03	15.54
SEI-26	SB-A5.2-0B134-46.0	072-VOC	36.89	51.27	14.38	10.15	8.63	14.98
SEI-27	SB-A5.2-0B134-50.0	073-VOC	36.97	51.42	14.45	11.70	10.16	13.16
SEI-28	SB-A5.2-0B134-55.0	074-VOC	37.13	52.43	15.30	15.65	14.13	9.71
SEI-29	SB-A5.2-0B134-61.0	077-VOC	36.85	51.66	14.81	15.30	13.63	10.92
SEI-30	SB-A5.2-0B134-64.0	078-VOC	37.07	50.72	13.65	12.20	11.24	7.87
SEI-33	SB-A5.2-NV137-4.5	079-VOC	37.21	51.59	14.38	12.79	11.29	11.73
SEI-34	SB-A5.2-NV137-8.0	080-VOC	36.86	51.74	14.88	12.91	11.51	10.84
SEI-35	SB-A5.2-NV137-11.0	081-VOC	37.07	47.61	10.54	10.68	8.77	17.88
SEI-36	SB-A5.2-NV137-14.0	082-VOC	37.14	50.87	13.73	12.62	11.24	10.94
SEI-37	SB-A5.2-NV137-17.0	083-VOC	37.07	51.25	14.18	10.31	9.45	8.34
SEI-38	SB-A5.2-NV137-20.0	084-VOC	36.94	51.38	14.44	9.94	8.88	10.66
SEI-39	SB-A5.2-NV137-23.0	085-VOC	36.86	51.94	15.08	12.40	11.19	9.76
SEI-40	SB-A5.2-NV137-26.0	086-VOC	37.13	51.95	14.82	13.06	11.90	8.88
SEI-41	SB-A5.2-NV137-29.0	087-VOC	37.10	51.14	14.04	13.32	11.86	10.96
SEI-42	SB-A5.2-NV137-32.0	088-VOC	36.67	51.40	14.73	11.80	10.63	9.92
SEI-43	SB-A5.2-NV137-36.0	089-VOC	36.57	49.29	12.72	7.03	6.35	9.67
SEI-44	SB-A5.2-NV137-39.0	090-VOC	37.29	52.69	15.40	10.42	9.42	9.60
SEI-45	SB-A5.2-NV137-42.0	092-VOC	37.28	51.25	13.97	11.95	10.96	8.28
SEI-46	SB-A5.2-NV137-45.0	093-VOC	37.09	52.06	14.97	9.12	8.23	9.76
SEI-47	SB-A5.2-NV137-48.0	094-VOC	36.84	52.00	15.16	9.39	8.19	12.78
SEI-48	SB-A5.2-NV137-55.0	095-VOC	37.22	51.74	14.52	11.77	10.20	13.34
SEI-49	SB-A5.2-NV137-58.0	096-VOC	36.96	51.99	15.03	12.63	10.91	13.62
SEI-54	SB-A5.2-NQ140-1.0	001-VOC	36.58	50.09	13.51	12.78	11.40	10.80
SEI-55	SB-A5.2-NQ140-4.0	002-VOC	36.36	51.82	15.46	16.97	15.24	10.19

205166832: Arcadis Lansing MI
Sample Weight and Percent Moisture Summary - SDG-1

Lab ID	Sample Name	Container ID	Initial Mass (g)	Final Vial Mass (g)	Final Sample Weight (g)	Wet Mass (g)	Dry Mass (g)	% Moisture
SEI-56	SB-A5.2-NQ140-6.0	003-VOC	36.63	52.09	15.46	13.32	11.58	13.06
SEI-57	SB-A5.2-NQ140-9.0	004-VOC	36.72	51.30	14.58	11.22	10.01	10.78
SEI-58	SB-A5.2-NQ140-13.5	005-VOC	36.65	51.24	14.59	13.01	11.46	11.91
SEI-59	SB-A5.2-NQ140-15.0	006-VOC	36.65	51.68	15.03	16.88	15.09	10.60
SEI-60	SB-A5.2-NQ140-18.0	007-VOC	36.84	52.50	15.66	13.78	12.50	9.29
SEI-61	SB-A5.2-NQ140-21.0	008-VOC	36.59	51.72	15.13	13.79	12.53	9.14
SEI-62	SB-A5.2-NQ140-24.0	009-VOC	36.62	52.65	16.03	15.85	14.26	10.03
SEI-63	SB-A5.2-NQ140-27.0	010-VOC	36.97	52.10	15.13	14.14	11.88	15.98
SEI-64	SB-A5.2-NQ140-30.0	011-VOC	36.58	53.21	16.63	14.62	13.42	8.21
SEI-65	SB-A5.2-NQ140-33.0	012-VOC	36.33	50.68	14.35	10.73	9.80	8.67
SEI-66	SB-A5.2-NQ140-36.0	013-VOC	36.40	52.32	15.92	12.92	11.56	10.53
SEI-67	SB-A5.2-NQ140-39.0	014-VOC	36.68	51.37	14.69	13.06	11.71	10.34
SEI-69	SB-A5.2-NQ140-42.0	015-VOC	36.65	52.65	16.00	14.60	13.04	10.68
SEI-70	SB-A5.2-NQ140-45.0	016-VOC	36.52	51.68	15.16	14.09	12.67	10.08
SEI-71	SB-A5.2-NQ140-48.0	017-VOC	36.69	52.14	15.45	14.39	12.90	10.35
SEI-73	SB-A5.2-NQ140-52.0	018-VOC	36.89	51.34	14.45	10.78	9.12	15.40
SEI-74	SB-A5.2-NQ140-55.0	019-VOC	36.52	51.86	15.34	14.72	12.91	12.30
SEI-75	SB-A5.2-NQ140-59.0	020-VOC	36.42	51.66	15.24	14.93	14.02	6.10
SEI-76	SB-A5.2-NQ140-62.0	021-VOC	36.85	52.27	15.42	10.94	9.07	17.09
SEI-77	SB-A5.2-NQ140-64.0	022-VOC	36.88	50.89	14.01	14.41	13.12	8.95

Mobile Lab 2 – SAMPLE LOG SHEET

Project ID: 205166832 ARCADIS
 Project Location: Lansing, MI

Sample ID	Collected			Received			Analysis					Lab ID	Analyst	Comments Or Vial ID / Final Wt(g)	
	By	Date	Time	By	Date	Time	Type*	Container**	Number of Containers	Preservation***	8260C				Other
063-VOC SB-AS.2-OE130-61	KV	6/6/16	1615	DJ	6/6/16	1700	2	2	1	3	✓		SEI 1	HK	063-VOC
SB-AS.2-OE130-53	KV	6/6/16	1538	DJ	6/6/16	1700	2	2	1	3	✓		2	HK	060-VOC
SB-AS.2-OE130-47	KV	6/6/16	1524	DJ	6/6/16	1700	2	2	1	3	✓		3	HK	059-VOC
SB-AS.2-OE130-2	KV	6/6/16	1120	DJ	6/6/16	1700	2	2	1	3	✓		4	HK	051-VOC
SB-AS.2-OE130-33	KV	6/6/16	1439	DJ	6/6/16	1700	2	2	1	3	✓		5	HK	055-VOC
SB-AS.2-OE130-37	KV	6/6/16	1449	DJ	6/6/16	1700	2	2	1	3	✓		6	HK	056-VOC
SB-AS.2-OE130-9	KV	6/6/16	1125	DJ	6/6/16	1700	2	2	1	3	✓		7	HK	053-VOC
SB-AS.2-OE130-5	KV	6/6/16	1123	DJ	6/6/16	1700	2	2	1	3	✓		8	HK	052-VOC
SB-AS.2-OE130-41	KV	6/6/16	1515	DJ	6/6/16	1700	2	2	1	3	✓		9	HK	057-VOC
SB-AS.2-OE130-61	KV	6/6/16	1600	DJ	6/6/16	1700	2	2	1	3	✓		10	HK	062-VOC
SB-AS.2-OE130-56	KV	6/6/16	1551	DJ	6/6/16	1700	2	2	1	3	✓		11	HK	061-VOC
SB-AS.2-OE130-28	KV	6/6/16	1419	DJ	6/6/16	1700	2	2	1	3	✓		12	HK	054-VOC
SB-AS.2-OE130-65-70	KV	6/7/16	0950	DJ	6/7/16	1045	1	2	2	3	✓		13	HK	
SB-AS.2-OE130-70-75	KV	6/7/16	1055	DJ	6/7/16	1110	1	2	2	3	✓		14	HK	
SB-AS.2-OB134-11	KV	6/7/16	1343	DJ	6/7/16	1530	2	2	1	3	✓		15	HK	066-VOC
SB-AS.2-OB134-52.5	KV	6/7/16	1543	DJ	6/7/16	1700	2	2	1	3	✓		16	HK	75/52.69
-58	KV	6/7/16	1608	DJ	6/7/16	1700	2	2	1	3	✓		17	HK	76/51.52
1	KV	6/7/16	1322	DJ	6/7/16	1700	2	2	1	3	✓		18	HK	58/52.01
4	KV	6/7/16	1322	DJ	6/7/16	1700	2	2	1	3	✓		19	HK	64/51.39
7	KV	6/7/16	1322	DJ	6/7/16	1700	2	2	1	3	✓		20	HK	65/53.61

* Type of Sample: (1) water (2) soil
 ** Container: (1) bag (2) bottle (3) other none
 *** Preservation: (1) ice (2) HCl (3) Other none



Mobile Lab 2 – SAMPLE LOG SHEET

Project ID: 205166832 ARCADIS
 Project Location: Lansing, Michigan

Sample ID	Collected			Received			Analysis					Lab ID	Analyst	Comments Or Vial ID / Final Wt(g)	
	By	Date	Time	By	Date	Time	Type*	Container**	Number of Containers	Preservation***	8260C				Other
SB-A5.2-OB134-26	KV	6/7/16	1443	DJ	6/7/16	1700	2	2	1	3	✓		SEI 21	HK	67/50.94
29	KV	6/7/16	1446	DJ	6/7/16	1700	2	2	1	3	✓		22	HK	68/51.21
32	KV	6/7/16	1450	DJ	6/7/16	1700	2	2	1	3	✓		23	HK	69/51.88
35	KV	6/7/16	1452	DJ	6/7/16	1700	2	2	1	3	✓		24	HK	70/52.96
38	KV	6/7/16	1510	DJ	6/7/16	1700	2	2	1	3	✓		25	HK	71/50.07
46	KV	6/7/16	1533	DJ	6/7/16	1700	2	2	1	3	✓		26	HK	72/51.27
50	KV	6/7/16	1538	DJ	6/7/16	1700	2	2	1	3	✓		27	HK	73/51.42
55	KV	6/7/16	1543	DJ	6/7/16	1700	2	2	1	3	✓		28	HK	74/52.43
61	KV	6/7/16	1630	DJ	6/7/16	1700	2	2	1	3	✓		29	HK	77/51.66
64	KV	6/7/16	1630	DJ	6/7/16	1700	2	2	1	3	✓		30	HK	78/50.72
65-70	KV	6/8/16	0915	DJ	6/8/16	934	1	2	2	3	✓		31	HK	
✓ 70-75	KV	6/8/16	1007	DJ	6/8/16	1015	1	2	2	3	✓		32	HK	
SB-A5.2-NV137-4.5	KV	6/8/16	1208	DJ	6/8/16	1300	2	2	1	3	✓		33	HK	79/51.59
8	KV	6/8/16	1215	DJ	6/8/16	1300	2	2	1	3	✓		34	HK	80/51.74
11	KV	6/8/16	1234	DJ	6/8/16	1300	2	2	1	3	✓		35	HK	81/47.61
14	KV	6/8/16	1239	DJ	6/8/16	1300	2	2	1	3	✓		36	HK	82/50.87
17	KV	6/8/16	1254	DJ	6/8/16	1300	2	2	1	3	✓		37	HK	83/51.25
20	KV	6/8/16	1305	DJ	6/8/16	1400	2	2	1	3	✓		38	HK	84/51.38
23	KV	6/8/16	1314	DJ	6/8/16	1400	2	2	1	3	✓		39	HK	85/51.94
✓ 26	KV	6/8/16	1327	DJ	6/8/16	1400	2	2	1	3	✓		40	HK	86/51.95

* Type of Sample: (1) water (2) soil
 ** Container: (1) bag (2) bottle (3) other _____

*** Preservation: (1) ice (2) HCl (3) Other none



Mobile Lab 2 – SAMPLE LOG SHEET

Project ID: 205166832 ARCADIS
 Project Location: Lansing, Michigan

Sample ID	Collected			Received			Analysis					Lab ID	Analyst	Comments Or Vial ID / Final Wt(g)	
	By	Date	Time	By	Date	Time	Type*	Container**	Number of Containers	Preservation***	8260C				Other
SB-AS.2-NV137-29	KV	6/8/16	1330	DJ	6/8/16	1400	2	2	1	3	✓		SEE 41	HK	87/51.14
32	KV	6/8/16	1345	DJ	6/8/16	1520	2	2	1	3	✓		42	HK	88/51.40
36	KV	6/8/16	1355	DJ	6/8/16	1520	2	2	1	3	✓		43	HK	89/49.29
39	KV	6/8/16	1401	DJ	6/8/16	1520	2	2	1	3	✓		44	HK	90/52.69
42	KV	6/8/16	1409	DJ	6/8/16	1520	2	2	1	3	✓		45	HK	92/51.25
45	KV	6/8/16	1422	DJ	6/8/16	1520	2	2	1	3	✓		46	HK	93/52.06
48	KV	6/8/16	1425	DJ	6/8/16	1520	2	2	1	3	✓		47	HK	94/52.0
55	KV	6/8/16	1723	DJ	6/8/16	1750	2	2	1	3	✓		48	HK	95/51.74
58	KV	6/8/16	1726	DJ	6/8/16	1750	2	2	1	3	✓		49	HK	96/51.99
60-65	KV	6/8/16	1800	DJ	6/9/16	900	1	2	2	3	✓		50	HK	
65-70	AV	6/9/16	1140	DJ	6/9/16	1145	1	2	2	3	✓		51	HK	
SBAS.3-00141-58-63	KV	6/9/16	1135	DJ	6/9/16	1145	1	2	2	3	✓		52	HK	
63-68	KV	6/9/16	1253	DJ	6/9/16	1300	1	2	2	3	✓		53	HK	
SB-AS.2-NV140-1	AV	6/9/16	1340	DJ	6/9/16	1425	2	2	1	3	✓		54	HK	1/50.09
4	AV	6/9/16	1342-001	DJ	6/9/16	1425	2	2	1	3	✓		55	HK	2/51.82
6	AV	6/9/16	1352	DJ	6/9/16	1425	2	2	1	3	✓		56	HK	3/52.09
9	AV	6/9/16	1355	DJ	6/9/16	1425	2	2	1	3	✓		57	HK	4/51.30
13.5	AV	6/9/16	1416	DJ	6/9/16	1425	2	2	1	3	✓		58	HK	5/51.24
15	AV	6/9/16	1413	DJ	6/9/16	1425	2	2	1	3	✓		59	HK	6/51.68
18	AV	6/9/16	1415	DJ	6/9/16	1455	2	2	1	3	✓		60	HK	7/52.5

* Type of Sample: (1) water (2) soil
 ** Container: (1) bag (2) bottle (3) other _____

*** Preservation: (1) ice (2) HCl (3) Other none



Mobile Lab 2 – SAMPLE LOG SHEET

Project ID: 205166832 ARCADIS
 Project Location: Lansing, Michigan.

Sample ID	Collected			Received			Analysis					Lab ID	Analyst	Comments Or Vial ID / Final Wt(g)	
	By	Date	Time	By	Date	Time	Type*	Container**	Number of Containers	Preservation***	8260C				Other
SB-A5.2-NQ140-21	AV	6/9/16	1427	DJ	6/9/16	1455	2	2	1	3	✓		SEIG1	HK	8 / 51.72
24	AV	6/9/16	1430	DJ	6/9/16	1455	2	2	1	3	✓		62	HK	9 / 52.65
27	AV	6/9/16	1432	DJ	6/9/16	1455	2	2	1	3	✓		63	HK	10 / 52.10
30	AV	6/9/16	1442	DJ	6/9/16	1455	2	2	1	3	✓		64	HK	11 / 53.21
33	AV	6/9/16	1445	DJ	6/9/16	1455	2	2	1	3	✓		65	HK	12 / 50.68
36	AV	6/9/16	1450	DJ	6/9/16	1455	2	2	1	3	✓		66	HK	13 / 52.32
39	AV	6/9/16	1453	DJ	6/9/16	1455	2	2	1	3	✓		67	HK	14 / 51.37
SB-A5.3-PA125-62-67	KV	6/9/16	1600	DJ	6/9/16	1620	1	2	2	3	✓		68	HK	
SB-A5.2-NQ140-42	AV	6/9/16	1505	DJ	6/10/16	800	2	2	1	3	✓		69	HK	15 / 52.65
45	AV	6/9/16	1510	DJ	6/10/16	800	2	2	1	3	✓		70	HK	16 / 51.68
48	AV	6/9/16	1512	DJ	6/10/16	800	2	2	1	3	✓		71	HK	17 / 52.14
SB-A5.3-PA125-67-72	KV	6/10/16	0837	DJ	6/10/16	845	1	2	2	3	✓		72	HK	
SB-A5.2-NQ140-52	AV	6/10/16	930	DJ	6/10/16	1000	2	2	1	3	✓		73	HK	18 / 51.39
55	AV	6/10/16	940	DJ	6/10/16	1000	2	2	1	3	✓		74	HK	19 / 51.86
59	AV	6/10/16	945	DJ	6/10/16	1000	2	2	1	3	✓		75	HK	20 / 51.66
62	AV	6/10/16	1022	DJ	6/10/16	1030	2	2	1	3	✓		76	HK	21 / 52.27
64	AV	6/10/16	1030	DJ	6/10/16	1030	2	2	1	3	✓		77	HK	22 / 50.89
65-70	AV	6/10/16	1110	DJ	6/10/16	1115	1	2	2	3	✓		78	HK	
SB-A5.3-PV104-62-67	KV	6/10/16	1238	DJ	6/10/16	1300	1	2	2	3	✓		79	HK	
SB-A5.2-NQ140-73-78	AV	6/10/16	1430	DJ	6/10/16	1500	1	2	2	3	✓		80	HK	

* Type of Sample: (1) water (2) soil
 ** Container: (1) bag (2) bottle (3) other _____

*** Preservation: (1) ice (2) HCl (3) Other None



lot 4715-14 ID 8999

LABORATORY ANALYTICAL RESULTS

Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: Soil
Location ID: SB-A5.2-0B134

Report Date: 6/16/2016
Date(s) Sampled: 06/07/2016 - 06/07/2016
Date(s) Analyzed: 06/08/2016 - 06/08/2016
Test Method: 8260C
Results Given as: ug/kg as dry weight
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	001.00		004.00		007.00		011.00		026.00		029.00		032.00		035.00	
			SB-A5.2-0B134-1.0		SB-A5.2-0B134-4.0		SB-A5.2-0B134-7.0		SB-A5.2-0B134-11.0		SB-A5.2-0B134-26.0		SB-A5.2-0B134-29.0		SB-A5.2-0B134-32.0		SB-A5.2-0B134-35.0	
Analysis Date			06/08/16 10:28	N	06/08/16 10:43	N	06/08/16 10:58	N	06/08/16 11:13	N	06/08/16 11:27	N	06/08/16 11:42	N	06/08/16 11:57	N	06/08/16 12:13	N
	Vinyl Chloride	75-01-4	29.7	U	31.3	U	29.6	U	82.8		33.1	U	32.9	U	29.7	U	28.7	U
	Chloroethane	75-00-3	25.3	J	16.9	J	67.4		1850		2600		4600		2870		28.7	U
	1,1-Dichloroethene	75-35-4	29.7	U	31.3	U	29.6	U	29.1	J	35.4		32.9	U	29.7	U	28.7	U
	trans-1,2-Dichloroethene	156-60-5	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	1,1-Dichloroethane	75-34-3	487		238		17.1	J	1350		9110		1710		416		28.7	U
	cis-1,2-Dichloroethene	156-59-2	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	1,1,1-Trichloroethane	71-55-6	180		76.5		57.0		472		48.3		50.3		29.7	U	28.7	U
	Trichloroethene	79-01-6	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	1,4-Dioxane	123-91-1	222		62.7	U	59.1	U	323		66.1	U	65.7	U	131		602	
	Tetrachloroethene	127-18-4	29.7	U	16.6	J	20.4	J	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	Bromofluorobenzene (SS)	460-00-4	92	%	94	%	90	%	90	%	91	%	91	%	92	%	93	%
Depth	Sample Name	CAS #	038.00		046.00		050.00		052.50		055.00		058.00		061.00		064.00	
Analysis Date			SB-A5.2-0B134-38.0		SB-A5.2-0B134-46.0		SB-A5.2-0B134-50.0		SB-A5.2-0B134-52.5		SB-A5.2-0B134-55.0		SB-A5.2-0B134-58.0		SB-A5.2-0B134-61.0		SB-A5.2-0B134-64.0	
Analysis Date			06/08/16 12:29	N	06/08/16 12:44	N	06/08/16 14:03	N	06/08/16 13:00	N	06/08/16 14:19	N	06/08/16 13:16	N	06/08/16 14:34	N	06/08/16 14:50	N
	Vinyl Chloride	75-01-4	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	Chloroethane	75-00-3	18.8	J	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	1,1-Dichloroethene	75-35-4	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	trans-1,2-Dichloroethene	156-60-5	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	1,1-Dichloroethane	75-34-3	92.2		32.7	U	19.1	J	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	cis-1,2-Dichloroethene	156-59-2	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	1,1,1-Trichloroethane	71-55-6	440		32.7	U	26.1	J	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	Trichloroethene	79-01-6	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	1,4-Dioxane	123-91-1	644		65.4	U	63.8	U	58.3	U	57.9	U	58.3	U	60.6	U	63.6	U
	Tetrachloroethene	127-18-4	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	Bromofluorobenzene (SS)	460-00-4	94	%	91	%	95	%	95	%	107	%	93	%	95	%	95	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: Soil
Location ID: SB-A5.2-0B134

Report Date: 6/28/2016
Date(s) Sampled: 06/07/2016 - 06/07/2016
Date(s) Analyzed: 06/08/2016 - 06/08/2016
Test Method: 8260C
Results Given as: ug/kg as dry weight
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	001.00		004.00		007.00		011.00		026.00		029.00		032.00		035.00	
			SB-A5.2-0B134-1.0		SB-A5.2-0B134-4.0		SB-A5.2-0B134-7.0		SB-A5.2-0B134-11.0		SB-A5.2-0B134-26.0		SB-A5.2-0B134-29.0		SB-A5.2-0B134-32.0		SB-A5.2-0B134-35.0	
Analysis Date			06/08/16 10:28	N	06/08/16 10:43	N	06/08/16 10:58	N	06/08/16 11:13	N	06/08/16 11:27	N	06/08/16 11:42	N	06/08/16 11:57	N	06/08/16 12:13	N
	Carbon Disulfide	75-15-0	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	Chloroform	67-66-3	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	Benzene	71-43-2	29.7	U	31.3	U	3.84	J	3.47	J	33.1	U	32.9	U	29.7	U	28.7	U
	Bromodichloromethane	75-27-4	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	Toluene	108-88-3	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	Ethylbenzene	100-41-4	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	m,p-Xylenes	179601-23-1	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	o-Xylene	95-47-6	29.7	U	31.3	U	29.6	U	31.6	U	33.1	U	32.9	U	29.7	U	28.7	U
	1,2,4-Trimethylbenzene	95-63-6	29.7	UQ	31.3	UQ	29.6	UQ	31.6	UQ	33.1	UQ	32.9	UQ	29.7	UQ	28.7	UQ
	Naphthalene	91-20-3	29.7	UQ	31.3	UQ	29.6	UQ	31.6	UQ	33.1	UQ	32.9	UQ	29.7	UQ	28.7	UQ
	Bromofluorobenzene (SS)	460-00-4	105	%	108	%	91	%	103	%	104	%	105	%	93	%	94	%
Depth	Sample Name	CAS #	038.00		046.00		050.00		052.50		055.00		058.00		061.00		064.00	
Analysis Date			SB-A5.2-0B134-38.0		SB-A5.2-0B134-46.0		SB-A5.2-0B134-50.0		SB-A5.2-0B134-52.5		SB-A5.2-0B134-55.0		SB-A5.2-0B134-58.0		SB-A5.2-0B134-61.0		SB-A5.2-0B134-64.0	
	Carbon Disulfide	75-15-0	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	12.1	J
	Chloroform	67-66-3	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	Benzene	71-43-2	35.5	U	32.7	U	31.9	U	29.2	U	354		7.28	J	30.3	U	31.8	U
	Bromodichloromethane	75-27-4	35.5	U	32.7	U	31.9	U	29.2	U	29.0	U	29.1	U	30.3	U	31.8	U
	Toluene	108-88-3	35.5	U	32.7	U	31.9	U	29.2	U	636		13.7	J	30.3	U	31.8	U
	Ethylbenzene	100-41-4	35.5	U	32.7	U	31.9	U	29.2	U	202		29.1	U	30.3	U	31.8	U
	m,p-Xylenes	179601-23-1	35.5	U	32.7	U	31.9	U	29.2	U	137		29.1	U	30.3	U	31.8	U
	o-Xylene	95-47-6	35.5	U	32.7	U	31.9	U	29.2	U	183		29.1	U	30.3	U	31.8	U
	1,2,4-Trimethylbenzene	95-63-6	35.5	UQ	32.7	UQ	31.9	UQ	29.2	UQ	71.2	Q	29.1	UQ	30.3	UQ	31.8	UQ
	Naphthalene	91-20-3	35.5	UQ	32.7	UQ	31.9	UQ	29.2	UQ	43.1	Q	29.1	UQ	30.3	UQ	31.8	UQ
	Bromofluorobenzene (SS)	460-00-4	95	%	93	%	95	%	95	%	125	%	93	%	113	%	113	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.

Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: Soil
Location ID: SB-A5.2-0E130

Report Date: 6/16/2016
Date(s) Sampled: 06/06/2016 - 06/06/2016
Date(s) Analyzed: 06/07/2016 - 06/07/2016
Test Method: 8260C
Results Given as: ug/kg as dry weight
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	002.00		005.00		009.00		028.00		033.00		037.00		041.00		047.00	
			SB-A5.2-0E130-2.0		SB-A5.2-0E130-5.0		SB-A5.2-0E130-9.0		SB-A5.2-0E130-28.0		SB-A5.2-0E130-33.0		SB-A5.2-0E130-37.0		SB-A5.2-0E130-41.0		SB-A5.2-0E130-47.0	
Analysis Date			06/07/16 15:00	N	06/07/16 15:15	N	06/07/16 15:30	N	06/07/16 15:45	N	06/07/16 16:00	N	06/07/16 16:16	N	06/07/16 16:31	N	06/07/16 16:46	N
	Vinyl Chloride	75-01-4	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	Chloroethane	75-00-3	31.9	U	36.4	U	23.5	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	1,1-Dichloroethene	75-35-4	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	trans-1,2-Dichloroethene	156-60-5	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	1,1-Dichloroethane	75-34-3	12.7	J	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	cis-1,2-Dichloroethene	156-59-2	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	1,1,1-Trichloroethane	71-55-6	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	Trichloroethene	79-01-6	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	1,4-Dioxane	123-91-1	63.7	U	72.7	U	72.4	U	110		1520		1920		65.7	U	64.3	U
	Tetrachloroethene	127-18-4	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	Bromofluorobenzene (SS)	460-00-4	95	%	97	%	95	%	97	%	95	%	99	%	96	%	97	%
Depth	Sample Name	CAS #	053.00		056.00		061.00		064.00									
Analysis Date			SB-A5.2-0E130-53.0		SB-A5.2-0E130-56.0		SB-A5.2-0E130-61.0		SB-A5.2-0E130-64.0									
	Vinyl Chloride	75-01-4	33.2	U	39.4	U	47.5	U	32.6	U								
	Chloroethane	75-00-3	33.2	U	39.4	U	47.5	U	32.6	U								
	1,1-Dichloroethene	75-35-4	33.2	U	39.4	U	47.5	U	32.6	U								
	trans-1,2-Dichloroethene	156-60-5	33.2	U	39.4	U	47.5	U	32.6	U								
	1,1-Dichloroethane	75-34-3	33.2	U	39.4	U	47.5	U	32.6	U								
	cis-1,2-Dichloroethene	156-59-2	33.2	U	39.4	U	47.5	U	32.6	U								
	1,1,1-Trichloroethane	71-55-6	33.2	U	39.4	U	47.5	U	32.6	U								
	Trichloroethene	79-01-6	33.2	U	39.4	U	47.5	U	32.6	U								
	1,4-Dioxane	123-91-1	66.5	U	78.8	U	95.0	U	65.3	U								
	Tetrachloroethene	127-18-4	33.2	U	39.4	U	47.5	U	32.6	U								
	Bromofluorobenzene (SS)	460-00-4	94	%	95	%	97	%	97	%								

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.

Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: Soil
Location ID: SB-A5.2-0E130

Report Date: 6/28/2016
Date(s) Sampled: 06/06/2016 - 06/06/2016
Date(s) Analyzed: 06/07/2016 - 06/07/2016
Test Method: 8260C
Results Given as: ug/kg as dry weight
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	002.00		005.00		009.00		028.00		033.00		037.00		041.00		047.00	
			SB-A5.2-0E130-2.0		SB-A5.2-0E130-5.0		SB-A5.2-0E130-9.0		SB-A5.2-0E130-28.0		SB-A5.2-0E130-33.0		SB-A5.2-0E130-37.0		SB-A5.2-0E130-41.0		SB-A5.2-0E130-47.0	
Analysis Date			06/07/16 15:00	N	06/07/16 15:15	N	06/07/16 15:30	N	06/07/16 15:45	N	06/07/16 16:00	N	06/07/16 16:16	N	06/07/16 16:31	N	06/07/16 16:46	N
	Carbon Disulfide	75-15-0	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	Chloroform	67-66-3	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	Benzene	71-43-2	31.9	U	36.4	U	11.6	J	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	Bromodichloromethane	75-27-4	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	Toluene	108-88-3	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	Ethylbenzene	100-41-4	31.9	U	36.4	U	36.2	U	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	m,p-Xylenes	179601-23-1	31.9	U	36.4	U	22.8	J	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	o-Xylene	95-47-6	31.9	U	36.4	U	23.5	J	33.2	U	35.6	U	36.4	U	32.8	U	32.1	U
	1,2,4-Trimethylbenzene	95-63-6	31.9	UQ	36.4	UQ	34.4	JQ	33.2	UQ	35.6	UQ	36.4	UQ	32.8	UQ	32.1	UQ
	Naphthalene	91-20-3	31.9	UQ	44.4	Q	181	Q	33.2	UQ	35.6	UQ	36.4	UQ	32.8	UQ	32.1	UQ
	Bromofluorobenzene (SS)	460-00-4	109	%	111	%	110	%	112	%	109	%	99	%	97	%	98	%
Depth	Sample Name	CAS #	053.00		056.00		061.00		064.00									
Analysis Date			SB-A5.2-0E130-53.0		SB-A5.2-0E130-56.0		SB-A5.2-0E130-61.0		SB-A5.2-0E130-64.0									
	Carbon Disulfide	75-15-0	33.2	U	39.4	U	16.6	J	16.0	J								
	Chloroform	67-66-3	33.2	U	39.4	U	47.5	U	32.6	U								
	Benzene	71-43-2	33.2	U	39.4	U	47.5	U	32.6	U								
	Bromodichloromethane	75-27-4	33.2	U	39.4	U	47.5	U	32.6	U								
	Toluene	108-88-3	33.2	U	39.4	U	47.5	U	32.6	U								
	Ethylbenzene	100-41-4	33.2	U	39.4	U	47.5	U	32.6	U								
	m,p-Xylenes	179601-23-1	33.2	U	39.4	U	47.5	U	32.6	U								
	o-Xylene	95-47-6	33.2	U	39.4	U	47.5	U	32.6	U								
	1,2,4-Trimethylbenzene	95-63-6	33.2	UQ	39.4	UQ	47.5	UQ	32.6	UQ								
	Naphthalene	91-20-3	33.2	UQ	39.4	UQ	47.5	UQ	32.6	UQ								
	Bromofluorobenzene (SS)	460-00-4	109	%	95	%	113	%	112	%								

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: Soil
Location ID: SB-A5.2-NQ140

Report Date: 6/16/2016
Date(s) Sampled: 06/09/2016 - 06/10/2016
Date(s) Analyzed: 06/09/2016 - 06/10/2016
Test Method: 8260C
Results Given as: ug/kg as dry weight
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	001.00		004.00		006.00		009.00		013.50		015.00		018.00		021.00	
			SB-A5.2-NQ140-1.0		SB-A5.2-NQ140-4.0		SB-A5.2-NQ140-6.0		SB-A5.2-NQ140-9.0		SB-A5.2-NQ140-13.5		SB-A5.2-NQ140-15.0		SB-A5.2-NQ140-18.0		SB-A5.2-NQ140-21.0	
Analysis Date			06/09/16 16:56	N	06/09/16 17:12	N	06/09/16 17:27	N	06/09/16 17:43	N	06/09/16 17:58	N	06/09/16 18:14	N	06/09/16 18:31	N	06/09/16 18:47	N
	Vinyl Chloride	75-01-4	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	Chloroethane	75-00-3	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	1,1-Dichloroethene	75-35-4	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	trans-1,2-Dichloroethene	156-60-5	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	1,1-Dichloroethane	75-34-3	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	cis-1,2-Dichloroethene	156-59-2	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	1,1,1-Trichloroethane	71-55-6	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	Trichloroethene	79-01-6	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	1,4-Dioxane	123-91-1	66.4	U	57.6	U	59.5	U	61.5	U	62.2	U	59.5	UJ	56.3	U	58.2	U
	Tetrachloroethene	127-18-4	33.2	U	28.8	U	29.8	U	30.8	U	31.1	U	29.8	UJ	28.2	U	29.1	U
	Bromofluorobenzene (SS)	460-00-4	94	%	97	%	92	%	93	%	93	%	94	%	94	%	94	%
Depth	Sample Name	CAS #	024.00		027.00		030.00		033.00		036.00		039.00		042.00		045.00	
Analysis Date			SB-A5.2-NQ140-24.0		SB-A5.2-NQ140-27.0		SB-A5.2-NQ140-30.0		SB-A5.2-NQ140-33.0		SB-A5.2-NQ140-36.0		SB-A5.2-NQ140-39.0		SB-A5.2-NQ140-42.0		SB-A5.2-NQ140-45.0	
Analysis Date			06/09/16 19:03	N	06/09/16 19:20	N	06/09/16 19:37	N	06/09/16 19:54	N	06/09/16 20:11	N	06/09/16 20:29	N	06/10/16 10:11	N	06/10/16 10:28	N
	Vinyl Chloride	75-01-4	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	Chloroethane	75-00-3	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	1,1-Dichloroethene	75-35-4	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	trans-1,2-Dichloroethene	156-60-5	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	1,1-Dichloroethane	75-34-3	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	cis-1,2-Dichloroethene	156-59-2	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	1,1,1-Trichloroethane	71-55-6	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	Trichloroethene	79-01-6	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	1,4-Dioxane	123-91-1	55.5	U	62.9	U	52.4	U	61.0	U	56.2	U	60.7	UJ	56.0	U	58.7	U
	Tetrachloroethene	127-18-4	27.7	U	31.5	U	26.2	U	30.5	U	28.1	U	30.4	UJ	28.0	U	29.3	U
	Bromofluorobenzene (SS)	460-00-4	86	%	97	%	85	%	95	%	84	%	96	%	95	%	94	%
Depth	Sample Name	CAS #	048.00		052.00		055.00		059.00		062.00		064.00					
Analysis Date			SB-A5.2-NQ140-48.0		SB-A5.2-NQ140-52.0		SB-A5.2-NQ140-55.0		SB-A5.2-NQ140-59.0		SB-A5.2-NQ140-62.0		SB-A5.2-NQ140-64.0					
Analysis Date			06/10/16 10:44	N	06/10/16 11:16	N	06/10/16 11:33	N	06/10/16 11:49	N	06/10/16 12:05	N	06/10/16 12:22	N				
	Vinyl Chloride	75-01-4	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	Chloroethane	75-00-3	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	1,1-Dichloroethene	75-35-4	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	trans-1,2-Dichloroethene	156-60-5	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	1,1-Dichloroethane	75-34-3	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	cis-1,2-Dichloroethene	156-59-2	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	1,1,1-Trichloroethane	71-55-6	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	Trichloroethene	79-01-6	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	1,4-Dioxane	123-91-1	57.8	UJ	65.4	U	59.5	U	55.9	U	62.6	U	62.7	U				
	Tetrachloroethene	127-18-4	28.9	UJ	32.7	U	29.7	U	28.0	U	31.3	U	31.4	U				
	Bromofluorobenzene (SS)	460-00-4	83	%	96	%	95	%	97	%	91	%	83	%				

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: Soil
Location ID: SB-A5.2-NQ140

Report Date: 6/29/2016
Date(s) Sampled: 06/09/2016 - 06/10/2016
Date(s) Analyzed: 06/09/2016 - 06/10/2016
Test Method: 8260C
Results Given as: ug/kg as dry weight
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	001.00	004.00	006.00	009.00	013.50	015.00	018.00	021.00
			SB-A5.2-NQ140-1.0	SB-A5.2-NQ140-4.0	SB-A5.2-NQ140-6.0	SB-A5.2-NQ140-9.0	SB-A5.2-NQ140-13.5	SB-A5.2-NQ140-15.0	SB-A5.2-NQ140-18.0	SB-A5.2-NQ140-21.0
Analysis Date			06/09/16 16:56	06/09/16 17:12	06/09/16 17:27	06/09/16 17:43	06/09/16 17:58	06/09/16 18:14	06/09/16 18:31	06/09/16 18:47
	Carbon Disulfide	75-15-0	33.2 U	28.8 U	29.8 U	30.8 U	31.1 U	29.8 UJ	28.2 U	29.1 U
	Chloroform	67-66-3	33.2 U	28.8 U	29.8 U	30.8 U	31.1 U	29.8 UJ	28.2 U	29.1 U
	Benzene	71-43-2	33.2 U	28.8 U	29.8 U	30.8 U	31.1 U	29.8 UJ	28.2 U	29.1 U
	Bromodichloromethane	75-27-4	33.2 U	28.8 U	29.8 U	30.8 U	31.1 U	29.8 UJ	28.2 U	29.1 U
	Toluene	108-88-3	33.2 U	28.8 U	29.8 U	30.8 U	31.1 U	29.8 UJ	28.2 U	29.1 U
	Ethylbenzene	100-41-4	33.2 U	28.8 U	29.8 U	30.8 U	31.1 U	29.8 UJ	28.2 U	29.1 U
	m,p-Xylenes	179601-23-1	33.2 U	28.8 U	29.8 U	30.8 U	31.1 U	29.8 UJ	28.2 U	29.1 U
	o-Xylene	95-47-6	33.2 U	28.8 U	29.8 U	30.8 U	31.1 U	29.8 UJ	28.2 U	29.1 U
	1,2,4-Trimethylbenzene	95-63-6	33.2 UQ	28.8 UQ	29.8 UQ	30.8 UQ	31.1 UQ	29.8 UJQ	28.2 UQ	29.1 UQ
	Naphthalene	91-20-3	33.2 UQ	28.8 UQ	29.8 UQ	30.8 UQ	31.1 UQ	29.8 UJQ	28.2 UQ	29.1 UQ
	Bromofluorobenzene (SS)	460-00-4	107 %	111 %	106 %	107 %	107 %	108 %	108 %	108 %
Depth	Sample Name	CAS #	024.00	027.00	030.00	033.00	036.00	039.00	042.00	045.00
			SB-A5.2-NQ140-24.0	SB-A5.2-NQ140-27.0	SB-A5.2-NQ140-30.0	SB-A5.2-NQ140-33.0	SB-A5.2-NQ140-36.0	SB-A5.2-NQ140-39.0	SB-A5.2-NQ140-42.0	SB-A5.2-NQ140-45.0
Analysis Date			06/09/16 19:03	06/09/16 19:20	06/09/16 19:37	06/09/16 19:54	06/09/16 20:11	06/09/16 20:29	06/10/16 10:11	06/10/16 10:28
	Carbon Disulfide	75-15-0	27.7 U	31.5 U	26.2 U	30.5 U	28.1 U	30.4 UJ	28.0 UQ	29.3 UQ
	Chloroform	67-66-3	27.7 U	31.5 U	26.2 U	30.5 U	28.1 U	30.4 UJ	28.0 U	29.3 U
	Benzene	71-43-2	27.7 U	31.5 U	26.2 U	30.5 U	28.1 U	30.4 UJ	28.0 U	29.3 U
	Bromodichloromethane	75-27-4	27.7 U	31.5 U	26.2 U	30.5 U	28.1 U	30.4 UJ	28.0 U	29.3 U
	Toluene	108-88-3	27.7 U	31.5 U	26.2 U	30.5 U	28.1 U	30.4 UJ	28.0 U	29.3 U
	Ethylbenzene	100-41-4	27.7 U	31.5 U	26.2 U	30.5 U	28.1 U	30.4 UJ	28.0 U	29.3 U
	m,p-Xylenes	179601-23-1	27.7 U	31.5 U	26.2 U	30.5 U	28.1 U	30.4 UJ	28.0 U	29.3 U
	o-Xylene	95-47-6	27.7 U	31.5 U	26.2 U	30.5 U	28.1 U	30.4 UJ	28.0 U	29.3 U
	1,2,4-Trimethylbenzene	95-63-6	27.7 UQ	31.5 UQ	26.2 UQ	30.5 UQ	28.1 UQ	30.4 UJQ	28.0 UQ	29.3 UQ
	Naphthalene	91-20-3	27.7 UQ	31.5 UQ	26.2 UQ	30.5 UQ	28.1 UQ	30.4 UJQ	28.0 UQ	29.3 UQ
	Bromofluorobenzene (SS)	460-00-4	112 %	112 %	111 %	110 %	111 %	111 %	110 %	109 %
Depth	Sample Name	CAS #	048.00	052.00	055.00	059.00	062.00	064.00		
			SB-A5.2-NQ140-48.0	SB-A5.2-NQ140-52.0	SB-A5.2-NQ140-55.0	SB-A5.2-NQ140-59.0	SB-A5.2-NQ140-62.0	SB-A5.2-NQ140-64.0		
Analysis Date			06/10/16 10:44	06/10/16 11:16	06/10/16 11:33	06/10/16 11:49	06/10/16 12:05	06/10/16 12:22		
	Carbon Disulfide	75-15-0	28.9 UJQ	32.7 UQ	29.7 UQ	28.0 UQ	31.3 UQ	31.4 UQ		
	Chloroform	67-66-3	28.9 UJ	32.7 U	29.7 U	28.0 U	31.3 U	31.4 U		
	Benzene	71-43-2	28.9 UJ	32.7 U	29.7 U	28.0 U	31.3 U	31.4 U		
	Bromodichloromethane	75-27-4	28.9 UJ	12.4 J	29.7 U	28.0 U	10.3 J	31.4 U		
	Toluene	108-88-3	28.9 UJ	32.7 U	29.7 U	28.0 U	31.3 U	31.4 U		
	Ethylbenzene	100-41-4	28.9 UJ	32.7 U	29.7 U	28.0 U	31.3 U	31.4 U		
	m,p-Xylenes	179601-23-1	28.9 UJ	32.7 U	29.7 U	28.0 U	31.3 U	31.4 U		
	o-Xylene	95-47-6	28.9 UJ	32.7 U	29.7 U	28.0 U	31.3 U	31.4 U		
	1,2,4-Trimethylbenzene	95-63-6	28.9 UJQ	32.7 UQ	29.7 UQ	28.0 UQ	31.3 UQ	31.4 UQ		
	Naphthalene	91-20-3	28.9 UJQ	32.7 UQ	29.7 UQ	28.0 UQ	31.3 UQ	31.4 UQ		
	Bromofluorobenzene (SS)	460-00-4	108 %	98 %	109 %	111 %	92 %	109 %		

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: Soil
Location ID: SB-A5.2-NV137

Report Date: 6/16/2016
Date(s) Sampled: 06/08/2016 - 06/08/2016
Date(s) Analyzed: 06/08/2016 - 06/09/2016
Test Method: 8260C
Results Given as: ug/kg as dry weight
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth		004.50		008.00		011.00		014.00		017.00		020.00		023.00		026.00	
Sample Name	CAS #	SB-A5.2-NV137-4.5		SB-A5.2-NV137-8.0		SB-A5.2-NV137-11.0		SB-A5.2-NV137-14.0		SB-A5.2-NV137-17.0		SB-A5.2-NV137-20.0		SB-A5.2-NV137-23.0		SB-A5.2-NV137-26.0	
Analysis Date		06/08/16 17:07	N	06/08/16 17:23	N	06/08/16 17:47	N	06/08/16 18:03	N	06/08/16 18:19	N	06/08/16 18:36	N	06/08/16 18:52	N	06/08/16 19:09	N
Vinyl Chloride	75-01-4	31.5 U		30.2 U		46.2 U		32.7 U		30.8 U		31.0 U		29.4 U		29.6 U	
Chloroethane	75-00-3	31.5 U		33.2 U		46.2 U		91.3 U		51.7 U		31.0 U		29.4 U		29.6 U	
1,1-Dichloroethene	75-35-4	31.5 U		30.2 U		46.2 U		32.7 U		30.8 U		31.0 U		29.4 U		29.6 U	
trans-1,2-Dichloroethene	156-60-5	31.5 U		30.2 U		46.2 U		32.7 U		30.8 U		31.0 U		29.4 U		29.6 U	
1,1-Dichloroethane	75-34-3	31.5 U		155		157		317		30.8 U		31.0 U		29.4 U		29.6 U	
cis-1,2-Dichloroethene	156-59-2	31.5 U		30.2 U		46.2 U		32.7 U		30.8 U		31.0 U		29.4 U		29.6 U	
1,1,1-Trichloroethane	71-55-6	31.5 U		52.8		129		55.9		30.8 U		31.0 U		29.4 U		29.6 U	
Trichloroethene	79-01-6	31.5 U		30.2 U		46.2 U		32.7 U		30.8 U		31.0 U		29.4 U		29.6 U	
1,4-Dioxane	123-91-1	63.0 U		60.3 U		92.4 U		65.4 U		61.6 U		62.0 U		58.8 U		59.2 U	
Tetrachloroethene	127-18-4	31.5 U		30.2 U		46.2 U		32.7 U		30.8 U		31.0 U		29.4 U		29.6 U	
Bromofluorobenzene (SS)	460-00-4	97 %		96 %		98 %		98 %		97 %		87 %		94 %		83 %	
Depth		029.00		032.00		036.00		039.00		042.00		045.00		048.00		055.00	
Sample Name	CAS #	SB-A5.2-NV137-29.0		SB-A5.2-NV137-32.0		SB-A5.2-NV137-36.0		SB-A5.2-NV137-39.0		SB-A5.2-NV137-42.0		SB-A5.2-NV137-45.0		SB-A5.2-NV137-48.0		SB-A5.2-NV137-55.0	
Analysis Date		06/08/16 19:25	N	06/08/16 19:42	N	06/08/16 19:58	N	06/08/16 20:15	N	06/08/16 20:31	N	06/08/16 20:48	N	06/08/16 21:04	N	06/09/16 09:51	N
Vinyl Chloride	75-01-4	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
Chloroethane	75-00-3	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
1,1-Dichloroethene	75-35-4	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
trans-1,2-Dichloroethene	156-60-5	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
1,1-Dichloroethane	75-34-3	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
cis-1,2-Dichloroethene	156-59-2	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
1,1,1-Trichloroethane	71-55-6	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
Trichloroethene	79-01-6	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
1,4-Dioxane	123-91-1	64.0 U		60.3 U		69.6 U		57.5 U		62.4 U		59.2 U		60.5 U		63.6 U	
Tetrachloroethene	127-18-4	32.0 U		30.1 U		34.8 U		28.7 U		31.2 U		29.6 U		30.3 U		31.8 U	
Bromofluorobenzene (SS)	460-00-4	98 %		96 %		94 %		96 %		95 %		93 %		94 %		97 %	
Depth		058.00															
Sample Name	CAS #	SB-A5.2-NV137-58.0															
Analysis Date		06/09/16 10:06	N														
Vinyl Chloride	75-01-4	30.8 U															
Chloroethane	75-00-3	30.8 U															
1,1-Dichloroethene	75-35-4	30.8 U															
trans-1,2-Dichloroethene	156-60-5	30.8 U															
1,1-Dichloroethane	75-34-3	30.8 U															
cis-1,2-Dichloroethene	156-59-2	30.8 U															
1,1,1-Trichloroethane	71-55-6	30.8 U															
Trichloroethene	79-01-6	30.8 U															
1,4-Dioxane	123-91-1	61.6 U															
Tetrachloroethene	127-18-4	30.8 U															
Bromofluorobenzene (SS)	460-00-4	98 %															

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: Soil
Location ID: SB-A5.2-NV137

Report Date: 6/28/2016
Date(s) Sampled: 06/08/2016 - 06/08/2016
Date(s) Analyzed: 06/08/2016 - 06/09/2016
Test Method: 8260C
Results Given as: ug/kg as dry weight
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	004.50	008.00	011.00	014.00	017.00	020.00	023.00	026.00
Analysis Date			SB-A5.2-NV137-4.5	SB-A5.2-NV137-8.0	SB-A5.2-NV137-11.0	SB-A5.2-NV137-14.0	SB-A5.2-NV137-17.0	SB-A5.2-NV137-20.0	SB-A5.2-NV137-23.0	SB-A5.2-NV137-26.0
			06/08/16 17:07	06/08/16 17:23	06/08/16 17:47	06/08/16 18:03	06/08/16 18:19	06/08/16 18:36	06/08/16 18:52	06/08/16 19:09
	Carbon Disulfide	75-15-0	31.5 UQ	30.2 UQ	46.2 UQ	32.7 UQ	30.8 UQ	31.0 UQ	29.4 UQ	29.6 UQ
	Chloroform	67-66-3	31.5 U	30.2 U	46.2 U	32.7 U	30.8 U	31.0 U	29.4 U	29.6 U
	Benzene	71-43-2	31.5 U	30.2 U	46.2 U	32.7 U	30.8 U	31.0 U	29.4 U	29.6 U
	Bromodichloromethane	75-27-4	31.5 U	30.2 U	46.2 U	32.7 U	30.8 U	31.0 U	29.4 U	29.6 U
	Toluene	108-88-3	31.5 U	30.2 U	46.2 U	32.7 U	30.8 U	31.0 U	29.4 U	29.6 U
	Ethylbenzene	100-41-4	31.5 U	30.2 U	46.2 U	32.7 U	30.8 U	31.0 U	29.4 U	29.6 U
	m,p-Xylenes	179601-23-1	31.5 U	30.2 U	46.2 U	32.7 U	30.8 U	31.0 U	29.4 U	29.6 U
	o-Xylene	95-47-6	31.5 U	30.2 U	46.2 U	32.7 U	30.8 U	31.0 U	29.4 U	29.6 U
	1,2,4-Trimethylbenzene	95-63-6	31.5 UQ	30.2 UQ	46.2 UQ	32.7 UQ	30.8 UQ	31.0 UQ	29.4 UQ	29.6 UQ
	Naphthalene	91-20-3	31.5 UQ	30.2 UQ	46.2 UQ	32.7 UQ	30.8 UQ	31.0 UQ	29.4 UQ	29.6 UQ
	Bromofluorobenzene (SS)	460-00-4	111 %	112 %	113 %	113 %	112 %	113 %	108 %	109 %
Depth	Sample Name	CAS #	029.00	032.00	036.00	039.00	042.00	045.00	048.00	055.00
Analysis Date			SB-A5.2-NV137-29.0	SB-A5.2-NV137-32.0	SB-A5.2-NV137-36.0	SB-A5.2-NV137-39.0	SB-A5.2-NV137-42.0	SB-A5.2-NV137-45.0	SB-A5.2-NV137-48.0	SB-A5.2-NV137-55.0
			06/08/16 19:25	06/08/16 19:42	06/08/16 19:58	06/08/16 20:15	06/08/16 20:31	06/08/16 20:48	06/08/16 21:04	06/08/16 09:51
	Carbon Disulfide	75-15-0	32.0 UQ	30.1 UQ	34.8 UQ	28.7 UQ	31.2 UQ	29.6 UQ	30.3 UQ	31.8 U
	Chloroform	67-66-3	32.0 U	30.1 U	34.8 U	28.7 U	31.2 U	29.6 U	30.3 U	31.8 U
	Benzene	71-43-2	32.0 U	30.1 U	34.8 U	28.7 U	31.2 U	29.6 U	30.3 U	31.8 U
	Bromodichloromethane	75-27-4	32.0 U	30.1 U	34.8 U	28.7 U	31.2 U	29.6 U	30.3 U	31.8 U
	Toluene	108-88-3	32.0 U	30.1 U	34.8 U	28.7 U	31.2 U	29.6 U	30.3 U	31.8 U
	Ethylbenzene	100-41-4	32.0 U	30.1 U	34.8 U	28.7 U	31.2 U	29.6 U	30.3 U	31.8 U
	m,p-Xylenes	179601-23-1	32.0 U	30.1 U	34.8 U	28.7 U	31.2 U	29.6 U	30.3 U	31.8 U
	o-Xylene	95-47-6	32.0 U	30.1 U	34.8 U	28.7 U	31.2 U	29.6 U	30.3 U	31.8 U
	1,2,4-Trimethylbenzene	95-63-6	32.0 UQ	30.1 UQ	34.8 UQ	28.7 UQ	31.2 UQ	29.6 UQ	30.3 UQ	31.8 UQ
	Naphthalene	91-20-3	32.0 UQ	30.1 UQ	34.8 UQ	28.7 UQ	31.2 UQ	29.6 UQ	30.3 UQ	31.8 UQ
	Bromofluorobenzene (SS)	460-00-4	113 %	111 %	109 %	111 %	96 %	94 %	95 %	111 %
Depth	Sample Name	CAS #	058.00							
Analysis Date			SB-A5.2-NV137-58.0							
			06/09/16 10:06							
	Carbon Disulfide	75-15-0	30.8 U							
	Chloroform	67-66-3	30.8 U							
	Benzene	71-43-2	30.8 U							
	Bromodichloromethane	75-27-4	30.8 U							
	Toluene	108-88-3	15.7 J							
	Ethylbenzene	100-41-4	30.8 U							
	m,p-Xylenes	179601-23-1	30.8 U							
	o-Xylene	95-47-6	30.8 U							
	1,2,4-Trimethylbenzene	95-63-6	30.8 UQ							
	Naphthalene	91-20-3	30.8 UQ							
	Bromofluorobenzene (SS)	460-00-4	113 %							

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.3-00141-GW

Report Date: 6/16/2016
Date(s) Sampled: 06/09/2016 - 06/09/2016
Date(s) Analyzed: 06/09/2016 - 06/09/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	058.00		063.00	
		SB-A5.3-00141-58.0-63.0		SB-A5.3-00141-63.0-68.0	
Analysis Date		06/09/16 12:51	N	06/09/16 13:21	N
Vinyl Chloride	75-01-4	1.00	U	1.00	U
Chloroethane	75-00-3	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	1.00	U	1.00	U
trans-1,2-Dichloroethene	156-60-5	1.00	U	1.00	U
1,1-Dichloroethane	75-34-3	1.00	U	1.00	U
cis-1,2-Dichloroethene	156-59-2	1.00	U	1.00	U
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U
1,4-Dioxane	123-91-1	3.55		40.3	
Tetrachloroethene	127-18-4	1.00	U	1.00	U
Bromofluorobenzene (SS)	460-00-4	93	%	93	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.3-00141-GW

Report Date: 6/28/2016
Date(s) Sampled: 06/09/2016 - 06/09/2016
Date(s) Analyzed: 06/09/2016 - 06/09/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	058.00		063.00	
		SB-A5.3-00141-58.0-63.0		SB-A5.3-00141-63.0-68.0	
Depth	Analysis Date				
Carbon Disulfide	75-15-0	1.00	U	1.00	U
Chloroform	67-66-3	1.22		0.400	J
Benzene	71-43-2	1.00	U	1.00	U
Bromodichloromethane	75-27-4	0.570	J	1.00	U
Toluene	108-88-3	0.490	J	28.3	
Ethylbenzene	100-41-4	1.00	U	1.00	U
m,p-Xylenes	179601-23-1	1.00	U	1.00	U
o-Xylene	95-47-6	1.00	U	1.00	U
1,2,4-Trimethylbenzene	95-63-6	1.00	UQ	1.00	UQ
Naphthalene	91-20-3	1.00	UQ	1.00	UQ
Bromofluorobenzene (SS)	460-00-4	108	%	107	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.

Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.2-0B134-GW

Report Date: 6/16/2016
Date(s) Sampled: 06/08/2016 - 06/08/2016
Date(s) Analyzed: 06/08/2016 - 06/08/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	065.00		070.00	
		SB-A5.2-0B134-65.0-70.0		SB-A5.2-0B134-70.0-75.0	
Analysis Date		06/08/16 13:32	N	06/08/16 15:22	N
Vinyl Chloride	75-01-4	1.00	U	1.00	U
Chloroethane	75-00-3	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	1.00	U	1.00	U
trans-1,2-Dichloroethene	156-60-5	1.00	U	1.00	U
1,1-Dichloroethane	75-34-3	1.00	U	1.00	U
cis-1,2-Dichloroethene	156-59-2	1.00	U	1.00	U
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U
1,4-Dioxane	123-91-1	4.48		3.36	
Tetrachloroethene	127-18-4	1.00	U	1.00	U
Bromofluorobenzene (SS)	460-00-4	96	%	80	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.2-0B134-GW

Report Date: 6/28/2016
Date(s) Sampled: 06/08/2016 - 06/08/2016
Date(s) Analyzed: 06/08/2016 - 06/08/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	065.00		070.00	
		SB-A5.2-0B134-65.0-70.0		SB-A5.2-0B134-70.0-75.0	
Depth	Analysis Date				
Carbon Disulfide	75-15-0	1.00	U	1.00	U
Chloroform	67-66-3	1.00	U	0.620	J
Benzene	71-43-2	1.00	U	0.200	J
Bromodichloromethane	75-27-4	1.00	U	1.00	U
Toluene	108-88-3	7.61		0.410	J
Ethylbenzene	100-41-4	1.00	U	1.00	U
m,p-Xylenes	179601-23-1	1.00	U	1.00	U
o-Xylene	95-47-6	1.00	U	1.00	U
1,2,4-Trimethylbenzene	95-63-6	1.00	UQ	1.00	UQ
Naphthalene	91-20-3	1.00	UQ	1.00	UQ
Bromofluorobenzene (SS)	460-00-4	110	%	93	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.

Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.2-0E130-GW

Report Date: 6/16/2016
Date(s) Sampled: 06/07/2016 - 06/07/2016
Date(s) Analyzed: 06/07/2016 - 06/07/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	065.00		070.00	
		SB-A5.2-0E130-65.0-70.0		SB-A5.2-0E130-70.0-75.0	
Analysis Date		06/07/16 13:32	N	06/07/16 13:47	N
Vinyl Chloride	75-01-4	1.00	U	1.00	U
Chloroethane	75-00-3	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	1.00	U	1.00	U
trans-1,2-Dichloroethene	156-60-5	1.00	U	1.00	U
1,1-Dichloroethane	75-34-3	1.00	U	1.00	U
cis-1,2-Dichloroethene	156-59-2	1.00	U	1.00	U
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U
1,4-Dioxane	123-91-1	2.00	U	2.00	U
Tetrachloroethene	127-18-4	1.00	U	1.00	U
Bromofluorobenzene (SS)	460-00-4	97	%	100	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.2-0E130-GW

Report Date: 6/28/2016
Date(s) Sampled: 06/07/2016 - 06/07/2016
Date(s) Analyzed: 06/07/2016 - 06/07/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	065.00		070.00	
		SB-A5.2-0E130-65.0-70.0		SB-A5.2-0E130-70.0-75.0	
Analysis Date		06/07/16 13:32	N	06/07/16 13:47	N
Carbon Disulfide	75-15-0	1.00	U	1.00	U
Chloroform	67-66-3	0.720	J	0.960	J
Benzene	71-43-2	1.00	U	1.00	U
Bromodichloromethane	75-27-4	0.280	J	0.350	J
Toluene	108-88-3	0.610	J	1.27	
Ethylbenzene	100-41-4	1.00	U	1.00	U
m,p-Xylenes	179601-23-1	1.00	U	1.00	U
o-Xylene	95-47-6	1.00	U	1.00	U
1,2,4-Trimethylbenzene	95-63-6	1.00	UQ	1.00	UQ
Naphthalene	91-20-3	1.00	UQ	1.00	UQ
Bromofluorobenzene (SS)	460-00-4	111	%	115	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.2-NQ140-GW

Report Date: 6/16/2016
Date(s) Sampled: 06/10/2016 - 06/10/2016
Date(s) Analyzed: 06/10/2016 - 06/10/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name Analysis Date	CAS #	065.00		073.00	
		SB-A5.2-NQ140-65.0-70.0		SB-A5.2-NQ140-73.0-78.0	
		06/10/16 12:38	N	06/10/16 15:15	N
Vinyl Chloride	75-01-4	1.00	U	1.00	U
Chloroethane	75-00-3	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	1.00	U	1.00	U
trans-1,2-Dichloroethene	156-60-5	1.00	U	1.00	U
1,1-Dichloroethane	75-34-3	1.00	U	1.00	U
cis-1,2-Dichloroethene	156-59-2	1.00	U	1.00	U
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U
1,4-Dioxane	123-91-1	1.71	J	11.3	
Tetrachloroethene	127-18-4	1.00	U	1.00	U
Bromofluorobenzene (SS)	460-00-4	84	%	98	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.

Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.2-NQ140-GW

Report Date: 6/28/2016
Date(s) Sampled: 06/10/2016 - 06/10/2016
Date(s) Analyzed: 06/10/2016 - 06/10/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name Analysis Date	CAS #	065.00		073.00	
		SB-A5.2-NQ140-65.0-70.0		SB-A5.2-NQ140-73.0-78.0	
		06/10/16 12:38	N	06/10/16 15:15	N
Carbon Disulfide	75-15-0	1.00	UQ	1.00	UQ
Chloroform	67-66-3	1.01		0.300	J
Benzene	71-43-2	0.200	J	0.960	J
Bromodichloromethane	75-27-4	0.540	J	1.00	U
Toluene	108-88-3	0.680	J	16.0	
Ethylbenzene	100-41-4	1.00	U	1.00	U
m,p-Xylenes	179601-23-1	1.00	U	1.00	U
o-Xylene	95-47-6	1.00	U	1.00	U
1,2,4-Trimethylbenzene	95-63-6	1.00	UQ	1.00	UQ
Naphthalene	91-20-3	1.00	UQ	1.00	UQ
Bromofluorobenzene (SS)	460-00-4	95	%	98	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.2-NV137-GW

Report Date: 6/16/2016
Date(s) Sampled: 06/08/2016 - 06/09/2016
Date(s) Analyzed: 06/09/2016 - 06/09/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	060.00		065.00	
		SB-A5.2-NV137-60.0-65.0		SB-A5.2-NV137-65.0-70.0	
Depth	Analysis Date				
Vinyl Chloride	75-01-4	1.00	U	1.00	U
Chloroethane	75-00-3	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	1.00	U	1.00	U
trans-1,2-Dichloroethene	156-60-5	1.00	U	1.00	U
1,1-Dichloroethane	75-34-3	1.00	U	1.00	U
cis-1,2-Dichloroethene	156-59-2	1.00	U	1.00	U
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U
1,4-Dioxane	123-91-1	2.00	U	2.00	U
Tetrachloroethene	127-18-4	1.00	U	1.00	U
Bromofluorobenzene (SS)	460-00-4	96	%	91	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.2-NV137-GW

Report Date: 6/28/2016
Date(s) Sampled: 06/08/2016 - 06/09/2016
Date(s) Analyzed: 06/09/2016 - 06/09/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	060.00		065.00	
		SB-A5.2-NV137-60.0-65.0		SB-A5.2-NV137-65.0-70.0	
Analysis Date		06/09/16 09:36	N	06/09/16 12:35	N
Carbon Disulfide	75-15-0	1.00	U	1.00	U
Chloroform	67-66-3	0.900	J	1.52	
Benzene	71-43-2	1.00	U	1.00	U
Bromodichloromethane	75-27-4	1.00	U	0.700	J
Toluene	108-88-3	1.00	U	0.360	J
Ethylbenzene	100-41-4	1.00	U	1.00	U
m,p-Xylenes	179601-23-1	1.00	U	1.00	U
o-Xylene	95-47-6	1.00	U	1.00	U
1,2,4-Trimethylbenzene	95-63-6	1.00	UQ	1.00	UQ
Naphthalene	91-20-3	1.00	UQ	1.00	UQ
Bromofluorobenzene (SS)	460-00-4	110	%	105	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.

Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.3-PA125-GW

Report Date: 6/16/2016
Date(s) Sampled: 06/09/2016 - 06/10/2016
Date(s) Analyzed: 06/10/2016 - 06/10/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	062.00		067.00	
		SB-A5.3-PA125-62.0-67.0		SB-A5.3-PA125-67.0-72.0	
Analysis Date		06/10/16 14:33	N	06/10/16 09:55	N
Vinyl Chloride	75-01-4	1.00	U	1.00	U
Chloroethane	75-00-3	1.00	U	1.00	U
1,1-Dichloroethene	75-35-4	1.00	U	1.00	U
trans-1,2-Dichloroethene	156-60-5	1.00	U	1.00	U
1,1-Dichloroethane	75-34-3	1.00	U	1.00	U
cis-1,2-Dichloroethene	156-59-2	1.00	U	1.00	U
1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U
Trichloroethene	79-01-6	1.00	U	1.00	U
1,4-Dioxane	123-91-1	2.00	U	2.00	U
Tetrachloroethene	127-18-4	1.00	U	1.00	U
Bromofluorobenzene (SS)	460-00-4	98	%	98	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.3-PA125-GW

Report Date: 6/28/2016
Date(s) Sampled: 06/09/2016 - 06/10/2016
Date(s) Analyzed: 06/10/2016 - 06/10/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Sample Name	CAS #	062.00		067.00	
		SB-A5.3-PA125-62.0-67.0		SB-A5.3-PA125-67.0-72.0	
Analysis Date		06/10/16 14:33	N	06/10/16 09:55	N
Carbon Disulfide	75-15-0	1.00	UQ	1.00	UQ
Chloroform	67-66-3	0.890	J	1.00	U
Benzene	71-43-2	1.00	U	1.00	U
Bromodichloromethane	75-27-4	1.00	U	1.00	U
Toluene	108-88-3	0.660	J	7.54	
Ethylbenzene	100-41-4	1.00	U	1.00	U
m,p-Xylenes	179601-23-1	1.00	U	1.00	U
o-Xylene	95-47-6	1.00	U	1.00	U
1,2,4-Trimethylbenzene	95-63-6	1.00	UQ	1.00	UQ
Naphthalene	91-20-3	1.00	UQ	1.00	UQ
Bromofluorobenzene (SS)	460-00-4	98	%	98	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.

Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.3-PV104-GW

Report Date: 6/16/2016
Date(s) Sampled: 06/10/2016 - 06/10/2016
Date(s) Analyzed: 06/10/2016 - 06/10/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	062.00		070.00		078.00	
			SB-A5.3-PV104-62.0-67.0		SB-A5.3-PV104-70.0-75.0		SB-A5.3-PV104-78.0-83.0	
Analysis Date			06/10/16 13:22	N	06/10/16 15:32	N	06/10/16 15:49	N
	Vinyl Chloride	75-01-4	1.00	U	1.00	U	1.00	U
	Chloroethane	75-00-3	1.00	U	1.00	U	1.00	U
	1,1-Dichloroethene	75-35-4	1.00	U	1.00	U	1.00	U
	trans-1,2-Dichloroethene	156-60-5	1.00	U	1.00	U	1.00	U
	1,1-Dichloroethane	75-34-3	1.00	U	1.00	U	1.00	U
	cis-1,2-Dichloroethene	156-59-2	1.00	U	1.00	U	1.00	U
	1,1,1-Trichloroethane	71-55-6	1.00	U	1.00	U	1.00	U
	Trichloroethene	79-01-6	1.00	U	1.00	U	1.00	U
	1,4-Dioxane	123-91-1	2.00	U	2.00	U	2.00	U
	Tetrachloroethene	127-18-4	1.00	U	1.00	U	1.00	U
	Bromofluorobenzene (SS)	460-00-4	96	%	86	%	98	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.



Cascade Technical Services - Mobile Laboratory Results

Laboratory Unit: ML2
Client: ARCADIS
Location: Lansing, MI
Project ID: ARCADIS Lansing MI
Cascade Project No.: 205166832
Matrix: GW
Location ID: SB-A5.3-PV104-GW

Report Date: 6/28/2016
Date(s) Sampled: 06/10/2016 - 06/10/2016
Date(s) Analyzed: 06/10/2016 - 06/10/2016
Test Method: 8260C
Results Given as: ug/L
Prep Method: Soils (SW), EPA 5035A0H/ASTM D6520-00
 Ground Waters (NPW), ASTM D6520-00



NY NELAP ID# 12004



ISO/IEC 17025:2005 Accredited



Accreditation # 74140

Depth	Sample Name	CAS #	062.00		070.00		078.00	
			SB-A5.3-PV104-62.0-67.0		SB-A5.3-PV104-70.0-75.0		SB-A5.3-PV104-78.0-83.0	
Analysis Date			06/10/16 13:22	N	06/10/16 15:32	N	06/10/16 15:49	N
	Carbon Disulfide	75-15-0	1.00	UQ	1.00	UQ	1.00	UQ
	Chloroform	67-66-3	1.31		0.480	J	0.710	J
	Benzene	71-43-2	0.180	J	1.00	U	1.00	U
	Bromodichloromethane	75-27-4	0.620	J	0.180	J	0.280	J
	Toluene	108-88-3	2.08		6.03		0.430	J
	Ethylbenzene	100-41-4	1.00	U	1.00	U	1.00	U
	m,p-Xylenes	179601-23-1	1.00	U	1.00	U	1.00	U
	o-Xylene	95-47-6	1.00	U	1.00	U	1.00	U
	1,2,4-Trimethylbenzene	95-63-6	1.00	UQ	1.00	UQ	1.00	UQ
	Naphthalene	91-20-3	1.00	UQ	1.00	UQ	1.00	UQ
	Bromofluorobenzene (SS)	460-00-4	96	%	98	%	112	%

U= Not detected above specified RL
 J= Estimated value
 Q= Associated with QC failure
 E= Estimated value, marginally above calibration level
 D= Analyzed at dilution
 N= Normal sample
 EB= Equip. Blank
 B= Blank contam.

APPENDIX D

Split Sample Analytical Comparison Tables and Graphs

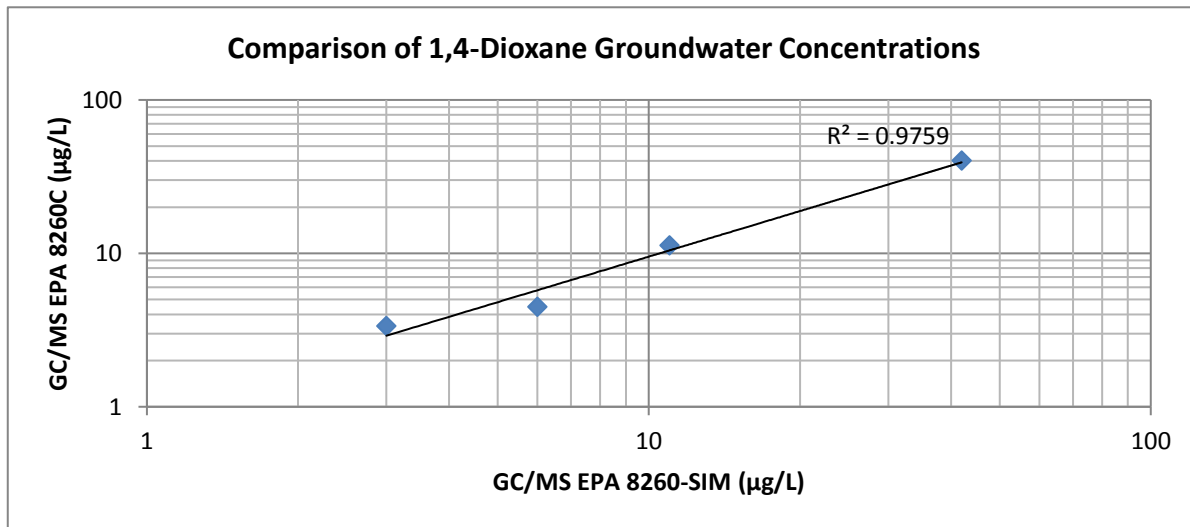


Appendix D
Comparison of USEPA Methods 8260-SIM and 8260C 1,4-Dioxane
Groundwater Concentrations
Supplemental Lower 1,4-Dioxane Toe Investigation
Plants 2, 3, and 6 Industrial Land
Lansing, Michigan



Sample Name	Depth (feet)	GC/MS EPA 8260C 1,4-Dioxane (µg/L)	GC/MS EPA 8260-SIM 1,4-Dioxane (µg/L)
SB-A5.2-NV137_60.0-65.0	60-65	<2	<3
SB-A5.2-NV137_65.0-70.0	65-70	<2	<3
SB-A5.2-OB134_65.0-70.0	65-70	4.48	6
SB-A5.2-OB134_70.0-75.0	70-75	3.4	3
SB-A5.2-OE130_65.0-70.0	65-70	<2	<3
SB-A5.2-OE130_70.0-75.0	70-75	<2	<3
SB-A5.3-OO141_58.0-63.0	58-63	3.6	<3
SB-A5.3-OO141_63.0-68.0	63-68	40.3	42
SB-A5.3-PA125_62.0-67.0	62-67	<2	3
SB-A5.2-NQ140_73.0-78.0	73-78	11.3	11

Notes:
µg/L = micrograms per liter
GC/MS = Gas chromatography/mass spectrometry
USEPA = United States Environmental Protection Agency
Graph only includes samples with detected concentrations



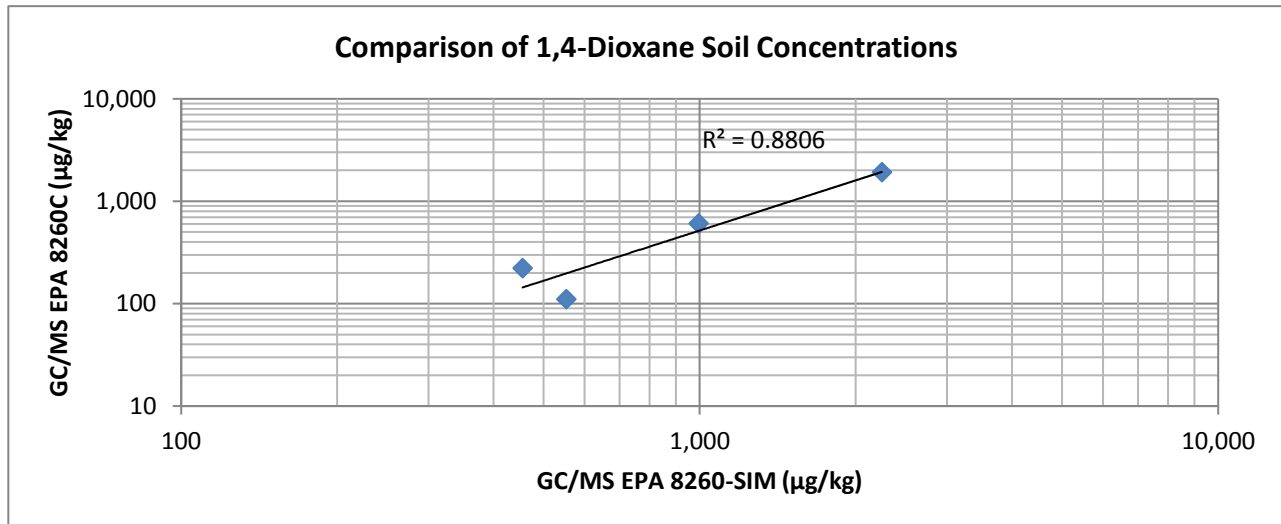
Appendix D

Comparison of USEPA Methods 8260-SIM and 8260C 1,4-Dioxane
 Soil Extract Concentrations
 Supplemental Lower 1,4-Dioxane Toe Investigation
 Plants 2, 3, and 6 Industrial Land
 Lansing, Michigan

Sample Name	Depth (feet)	Cascade GC/MS EPA 8260C 1,4-Dioxane (µg/kg)	Merit GC/MS EPA 8260-SIM 1,4-Dioxane (µg/kg)
SB-A5.2-OE130_28	28	110	553
SB-A5.2-OE130_37	37	1920	2246
SB-A5.2-OB134_1	1	222	455
SB-A5.2-OB134_35	35	602	996
SB-A5.2-NQ140_36	36	<56.2	<223

Notes:

- Soil results reported on dry weight basis
- < = less than
- µg/kg = micrograms per kilogram
- GC/MS = Gas chromatography/mass spectrometry
- USEPA = United States Environmental Protection Agency
- Graph only includes samples with detected concentrations
- Merit = Merit Laboratories, Inc.
- Cascade = Cascade Technical Services



APPENDIX E

Merit Laboratories Analytical Reports





Analytical Laboratory Report

Report ID: S73899.01(01)
Generated on 06/08/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S73899.01-S73899.02
Project: B0064479.2016.00102 / RACER Lansing Plant 2
Collected Date: 06/07/2016
Submitted Date/Time: 06/07/2016 13:19
Sampled by: Alex Villhauer
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Results relate only to items tested as received by 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.

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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S73899.01	SB-A5.2-OE130_65-70	Groundwater	06/07/16 09:50
S73899.02	SB-A5.2-OE130_70-75	Groundwater	06/07/16 10:55



Analytical Laboratory Report

Lab Sample ID: S73899.01
 Sample Tag: SB-A5.2-OE130_65-70
 Collected Date/Time: 06/07/2016 09:50
 Matrix: Groundwater
 COC Reference: 098070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	8.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/08/16 10:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/07/16 16:17	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/07/16 14:58	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/07/16 14:58	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/07/16 14:58	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/07/16 14:58	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/07/16 14:58	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S73899.01 (continued)

Sample Tag: SB-A5.2-OE130_65-70

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/07/16 14:58	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 14:58	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S73899.02
 Sample Tag: SB-A5.2-OE130_70-75
 Collected Date/Time: 06/07/2016 10:55
 Matrix: Groundwater
 COC Reference: 098070

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	8.8	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/08/16 10:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/07/16 16:37	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/07/16 15:20	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/07/16 15:20	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/07/16 15:20	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	156-59-2	
Chloroform	1	ug/L	1	SW8260C	06/07/16 15:20	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/07/16 15:20	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/07/16 15:20	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	10061-01-5	
Toluene	1	ug/L	1	SW8260C	06/07/16 15:20	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S73899.02 (continued)

Sample Tag: SB-A5.2-OE130_70-75

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/07/16 15:20	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/07/16 15:20	JGH	120-82-1	



Merit
Laboratories, Inc.

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

C.O.C. PAGE # 1 OF 1

098070

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Randy Christensen
 COMPANY: Arcadis
 ADDRESS: 28550 Cabot Drive, Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 248-774-2240 FAX NO.: 248-994-2241 P.O. NO.: B0064479.2016.00102
 E-MAIL ADDRESS: Randy.Christensen@Arcadis.com QUOTE NO.:

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

PROJECT NO./NAME: B0064479.2016.00102 / RACER Lansing PL SAMPLER(S) - PLEASE PRINT/SIGN NAME: Alex Villhøvt / Katelyn Voet
 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=WIFE A=AIR W=WASTE

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR <u>2016</u>		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives												
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MnOH	OTHER						
<u>73899.01</u>	<u>6/7/16</u>	<u>9:50</u>	<u>SB-A5.2-OE130_65-70</u>	<u>GW</u>	<u>3</u>		<u>3</u>											
<u>.02</u>	<u>"</u>	<u>10:55</u>	<u>SB-A5.2-OE130-70-75</u>	<u>GW</u>	<u>3</u>		<u>3</u>											

VOCs, 1,4-Dioxane SMS

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

cc: alex.villhøvt@Arcadis.com
 Jesse.Wright@arcadis.com
 - Confirm VOC list with Jesse Wright 317-236-2880 (email is above)

RELINQUISHED BY: Alex Villhøvt / Arcadis *Sampler DATE: 6/7/16 TIME: 13:05
 RECEIVED BY: Walt Tan DATE: 6-7-16 TIME: 13:05

RELINQUISHED BY: Walt Tan DATE: 6-7-16 TIME: 13:19
 RECEIVED BY: Thavin Phang DATE: 6/7/16 TIME: 13:19
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: TEMP. ON ARRIVAL 8.8



Analytical Laboratory Report

Report ID: S73968.01(01)
Generated on 06/10/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S73968.01-S73968.03
Project: B0064479.2016.00102 / RACER Lansing Plant 2
Collected Date: 06/08/2016
Submitted Date/Time: 06/09/2016 08:00
Sampled by: Kaitlyn Voet
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Results relate only to items tested as received by 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.

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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S73968.01	SB-A5.2-OB134_65-70	Groundwater	06/08/16 09:15
S73968.02	SB-A5.2-OB134_70-75	Groundwater	06/08/16 10:07
S73968.03	SB-A5.2-NV137_60-65	Groundwater	06/08/16 18:00



Analytical Laboratory Report

Lab Sample ID: S73968.01
 Sample Tag: SB-A5.2-OB134_65-70
 Collected Date/Time: 06/08/2016 09:15
 Matrix: Groundwater
 COC Reference: 098617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/10/16 14:05	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	106-93-4	
1,4-Dioxane	6	ug/L	3	SW8260B - SIM	06/09/16 12:19	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/09/16 17:11	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/09/16 17:11	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/09/16 17:11	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/09/16 17:11	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/09/16 17:11	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	10061-01-5	
Toluene	10	ug/L	1	SW8260C	06/09/16 17:11	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S73968.01 (continued)

Sample Tag: SB-A5.2-OB134_65-70

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/09/16 17:11	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:11	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S73968.02
 Sample Tag: SB-A5.2-OB134_70-75
 Collected Date/Time: 06/08/2016 10:07
 Matrix: Groundwater
 COC Reference: 098617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/10/16 14:05	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	106-93-4	
1,4-Dioxane	3	ug/L	3	SW8260B - SIM	06/09/16 12:39	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/09/16 17:33	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/09/16 17:33	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/09/16 17:33	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/09/16 17:33	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/09/16 17:33	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S73968.02 (continued)

Sample Tag: SB-A5.2-OB134_70-75

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/09/16 17:33	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:33	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S73968.03
 Sample Tag: SB-A5.2-NV137_60-65
 Collected Date/Time: 06/08/2016 18:00
 Matrix: Groundwater
 COC Reference: 098617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs <2 STD Units N/A 06/10/16 14:05 JML

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/09/16 12:59	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/09/16 17:55	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/09/16 17:55	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/09/16 17:55	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	156-59-2	
Chloroform	1	ug/L	1	SW8260C	06/09/16 17:55	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/09/16 17:55	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/09/16 17:55	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S73968.03 (continued)

Sample Tag: SB-A5.2-NV137_60-65

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/09/16 17:55	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/09/16 17:55	JGH	120-82-1	



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

098617

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Randy Christensen
 COMPANY: Arcadis
 ADDRESS: 28550 Cabot Drive, Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241
 E-MAIL ADDRESS: Randy.Christensen@arcadis.com
 P.O. NO.: B0064479.2016.00102
 QUOTE NO.:

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

PROJECT NO./NAME: RACER Lansing Plant 2 / B0064479.2016.00102
 SAMPLER(S) - PLEASE PRINT/SIGN NAME: Kaitlyn Voet Kaitlyn Voet
 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=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 2016		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
73968.01	6/8	9:15	SB-A5.2-0B134-65-70	EW	3		3					
.02	6/8	10:07	SB-A5.2-0B134-70-75	EW	3		3					
.03	6/8	18:00	SB-A5.2-0B137-60-65	GW	3		3					

VOCs (TCL)
 1,4-Dioxane (SMS)

Certifications
 OHIO VAP Drinking Water
 DoD NPDES

Project Locations
 Detroit New York
 Other _____

Special Instructions
cc: alex.villhara@arcadis.com
jesse.wright@arcadis.com

RELINQUISHED BY: Kaitlyn Voet/Arcadis Sampler
 SIGNATURE/ORGANIZATION: _____ DATE: 6/8/16 TIME: 18:43
 RECEIVED BY: _____ DATE: _____ TIME: _____
 SIGNATURE/ORGANIZATION: _____ DATE: _____ TIME: _____

RELINQUISHED BY: Merit Probst
 SIGNATURE/ORGANIZATION: _____ DATE: 6/9/16 TIME: 08:00
 RECEIVED BY: [Signature]
 SIGNATURE/ORGANIZATION: _____ DATE: 6/9/16 TIME: 08:00
 SEAL NO. SEAL INTACT YES NO INITIALS: _____ NOTES: _____ TEMP. ON ARRIVAL: 5.2

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



Analytical Laboratory Report

Supplemental Report

Report ID: S74010.01(02)
Generated on 06/14/2016
Replaces report S74010.01(01) generated on 06/13/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S74010.01-S74010.04
Project: B0064479.2016.00102 / RACER Lansing Plant 2
Collected Date: 06/09/2016
Submitted Date/Time: 06/10/2016 08:00
Sampled by: A Villhauer/K Voet
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Supplemental Report

General Report Notes

Results relate only to items tested as received by 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.

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.

Report Narrative

All analyses completed



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

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



Analytical Laboratory Report

Supplemental Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Supplemental Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S74010.01	SB-A5.2-NV137_65-70	Groundwater	06/09/16 11:40
S74010.02	SB-A5.3-00141_58-63	Groundwater	06/09/16 11:35
S74010.03	SB-A5.3-00141_63-68	Groundwater	06/09/16 12:53
S74010.04	SB-A5.3-PA125_62-67	Groundwater	06/09/16 14:00



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.01
 Sample Tag: SB-A5.2-NV137_65-70
 Collected Date/Time: 06/09/2016 11:40
 Matrix: Groundwater
 COC Reference: 098067

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/13/16 15:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	96-12-8	R
1,2-Dibromo-3-chloropropane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	96-12-8	
1,2-Dibromoethane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	106-93-4	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	106-93-4	R
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/10/16 17:56	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	76-13-1	R
Acetone	11	ug/L	10	SW8260C	06/13/16 16:17	JGH	67-64-1	BR
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-15-0	R
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/13/16 16:17	JGH	79-20-9	R
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	1634-04-4	R
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/13/16 16:17	JGH	78-93-3	R
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-71-8	R
Chloromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	74-87-3	R
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-01-4	R
Bromomethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	74-83-9	R
Chloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-00-3	R
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-69-4	R
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-35-4	R
Methylene chloride	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-09-2	R
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	156-60-5	R
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-34-3	R
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	156-59-2	R
Chloroform	2	ug/L	1	SW8260C	06/13/16 16:17	JGH	67-66-3	R
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	71-55-6	R
Cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	110-82-7	R
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/13/16 16:17	JGH	108-10-1	R
2-Hexanone	Not detected	ug/L	10	SW8260C	06/13/16 16:17	JGH	591-78-6	R
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	56-23-5	R
Benzene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	71-43-2	R
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	107-06-2	R
Trichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	79-01-6	R
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	78-87-5	R
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-27-4	R
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	108-87-2	R
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	10061-01-5	R
Toluene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	108-88-3	R

R-Preliminary result

B-Compound also found in associated method blank



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.01 (continued)

Sample Tag: SB-A5.2-NV137_65-70

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	10061-02-6	R
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	79-00-5	R
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	127-18-4	R
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	124-48-1	R
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	108-90-7	R
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	79-34-5	R
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	100-41-4	R
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/13/16 16:17	JGH		R
o-Xylene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	95-47-6	R
Styrene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	100-42-5	R
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	98-82-8	R
Bromoform	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	75-25-2	R
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	541-73-1	R
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	106-46-7	R
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	95-50-1	R
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:17	JGH	120-82-1	R
TCL Volatile Organics 8260 (Replicate 01)								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/14/16 13:57	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 13:57	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 13:57	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	156-59-2	
Chloroform	1	ug/L	1	SW8260C	06/14/16 13:57	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 13:57	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 13:57	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	10061-01-5	

R-Preliminary result



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.01 (continued)

Sample Tag: SB-A5.2-NV137_65-70

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (Replicate 01) (continued)								
Toluene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 13:57	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:57	JGH	120-82-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.02
 Sample Tag: SB-A5.3-00141_58-63
 Collected Date/Time: 06/09/2016 11:35
 Matrix: Groundwater
 COC Reference: 098067

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/13/16 15:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	96-12-8	R
1,2-Dibromo-3-chloropropane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	96-12-8	
1,2-Dibromoethane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	106-93-4	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	106-93-4	R
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/10/16 18:16	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	76-13-1	R
Acetone	19	ug/L	10	SW8260C	06/13/16 16:39	JGH	67-64-1	BR
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-15-0	R
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/13/16 16:39	JGH	79-20-9	R
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	1634-04-4	R
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/13/16 16:39	JGH	78-93-3	R
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-71-8	R
Chloromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	74-87-3	R
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-01-4	R
Bromomethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	74-83-9	R
Chloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-00-3	R
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-69-4	R
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-35-4	R
Methylene chloride	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-09-2	R
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	156-60-5	R
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-34-3	R
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	156-59-2	R
Chloroform	1	ug/L	1	SW8260C	06/13/16 16:39	JGH	67-66-3	R
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	71-55-6	R
Cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	110-82-7	R
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/13/16 16:39	JGH	108-10-1	R
2-Hexanone	Not detected	ug/L	10	SW8260C	06/13/16 16:39	JGH	591-78-6	R
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	56-23-5	R
Benzene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	71-43-2	R
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	107-06-2	R
Trichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	79-01-6	R
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	78-87-5	R
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-27-4	R
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	108-87-2	R
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	10061-01-5	R
Toluene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	108-88-3	R

R-Preliminary result

B-Compound also found in associated method blank



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.02 (continued)

Sample Tag: SB-A5.3-00141_58-63

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	10061-02-6	R
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	79-00-5	R
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	127-18-4	R
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	124-48-1	R
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	108-90-7	R
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	79-34-5	R
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	100-41-4	R
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/13/16 16:39	JGH		R
o-Xylene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	95-47-6	R
Styrene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	100-42-5	R
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	98-82-8	R
Bromoform	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	75-25-2	R
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	541-73-1	R
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	106-46-7	R
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	95-50-1	R
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 16:39	JGH	120-82-1	R
TCL Volatile Organics 8260 (Replicate 01)								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	76-13-1	
Acetone	20	ug/L	10	SW8260C	06/14/16 14:20	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 14:20	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 14:20	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	156-59-2	
Chloroform	1	ug/L	1	SW8260C	06/14/16 14:20	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 14:20	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 14:20	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	10061-01-5	

R-Preliminary result



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.02 (continued)

Sample Tag: SB-A5.3-00141_58-63

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (Replicate 01) (continued)								
Toluene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 14:20	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:20	JGH	120-82-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.03
 Sample Tag: SB-A5.3-00141_63-68
 Collected Date/Time: 06/09/2016 12:53
 Matrix: Groundwater
 COC Reference: 098067

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs >2 STD Units N/A 06/13/16 15:00 JML

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	96-12-8	R
1,2-Dibromo-3-chloropropane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	96-12-8	
1,2-Dibromoethane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	106-93-4	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	106-93-4	R
1,4-Dioxane	42	ug/L	3	SW8260B - SIM	06/10/16 18:36	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	76-13-1	R
Acetone	49	ug/L	10	SW8260C	06/13/16 17:01	JGH	67-64-1	BR
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-15-0	R
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/13/16 17:01	JGH	79-20-9	R
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	1634-04-4	R
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/13/16 17:01	JGH	78-93-3	R
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-71-8	R
Chloromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	74-87-3	R
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-01-4	R
Bromomethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	74-83-9	R
Chloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-00-3	R
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-69-4	R
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-35-4	R
Methylene chloride	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-09-2	R
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	156-60-5	R
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-34-3	R
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	156-59-2	R
Chloroform	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	67-66-3	R
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	71-55-6	R
Cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	110-82-7	R
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/13/16 17:01	JGH	108-10-1	R
2-Hexanone	Not detected	ug/L	10	SW8260C	06/13/16 17:01	JGH	591-78-6	R
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	56-23-5	R
Benzene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	71-43-2	R
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	107-06-2	R
Trichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	79-01-6	R
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	78-87-5	R
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-27-4	R
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	108-87-2	R
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	10061-01-5	R
Toluene	15	ug/L	1	SW8260C	06/13/16 17:01	JGH	108-88-3	R

R-Preliminary result

B-Compound also found in associated method blank



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.03 (continued)

Sample Tag: SB-A5.3-00141_63-68

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	10061-02-6	R
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	79-00-5	R
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	127-18-4	R
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	124-48-1	R
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	108-90-7	R
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	79-34-5	R
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	100-41-4	R
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/13/16 17:01	JGH		R
o-Xylene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	95-47-6	R
Styrene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	100-42-5	R
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	98-82-8	R
Bromoform	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	75-25-2	R
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	541-73-1	R
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	106-46-7	R
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	95-50-1	R
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:01	JGH	120-82-1	R
TCL Volatile Organics 8260 (Replicate 01)								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	76-13-1	
Acetone	50	ug/L	10	SW8260C	06/14/16 14:43	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 14:43	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 14:43	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 14:43	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 14:43	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	10061-01-5	

R-Preliminary result



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.03 (continued)

Sample Tag: SB-A5.3-00141_63-68

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (Replicate 01) (continued)								
Toluene	5	ug/L	1	SW8260C	06/14/16 14:43	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 14:43	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 14:43	JGH	120-82-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.04
 Sample Tag: SB-A5.3-PA125_62-67
 Collected Date/Time: 06/09/2016 14:00
 Matrix: Groundwater
 COC Reference: 098067

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	>2	STD Units		N/A	06/13/16 15:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	96-12-8	R
1,2-Dibromo-3-chloropropane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	96-12-8	
1,2-Dibromoethane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	106-93-4	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	106-93-4	R
1,4-Dioxane	3	ug/L	3	SW8260B - SIM	06/10/16 18:56	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	76-13-1	R
Acetone	20	ug/L	10	SW8260C	06/13/16 17:23	JGH	67-64-1	BR
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-15-0	R
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/13/16 17:23	JGH	79-20-9	R
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	1634-04-4	R
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/13/16 17:23	JGH	78-93-3	R
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-71-8	R
Chloromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	74-87-3	R
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-01-4	R
Bromomethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	74-83-9	R
Chloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-00-3	R
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-69-4	R
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-35-4	R
Methylene chloride	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-09-2	R
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	156-60-5	R
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-34-3	R
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	156-59-2	R
Chloroform	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	67-66-3	R
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	71-55-6	R
Cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	110-82-7	R
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/13/16 17:23	JGH	108-10-1	R
2-Hexanone	Not detected	ug/L	10	SW8260C	06/13/16 17:23	JGH	591-78-6	R
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	56-23-5	R
Benzene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	71-43-2	R
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	107-06-2	R
Trichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	79-01-6	R
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	78-87-5	R
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-27-4	R
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	108-87-2	R
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	10061-01-5	R
Toluene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	108-88-3	R

R-Preliminary result

B-Compound also found in associated method blank



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.04 (continued)

Sample Tag: SB-A5.3-PA125_62-67

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	10061-02-6	R
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	79-00-5	R
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	127-18-4	R
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	124-48-1	R
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	108-90-7	R
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	79-34-5	R
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	100-41-4	R
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/13/16 17:23	JGH		R
o-Xylene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	95-47-6	R
Styrene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	100-42-5	R
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	98-82-8	R
Bromoform	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	75-25-2	R
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	541-73-1	R
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	106-46-7	R
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	95-50-1	R
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 17:23	JGH	120-82-1	R
TCL Volatile Organics 8260 (Replicate 01)								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	76-13-1	
Acetone	15	ug/L	10	SW8260C	06/14/16 15:07	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 15:07	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 15:07	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 15:07	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 15:07	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	10061-01-5	

R-Preliminary result



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74010.04 (continued)

Sample Tag: SB-A5.3-PA125_62-67

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (Replicate 01) (continued)								
Toluene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 15:07	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:07	JGH	120-82-1	



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

098067

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Rendy Christensen
 COMPANY: Arcadis
 ADDRESS: 28550 Cabot Dr., Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241
 E-MAIL ADDRESS: Rendy.Christensen@arcadis.com
 P.O. NO.: B0064479.2016.00102
 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: B0064479.2016.00102 / RACER Lansing Plant 2
 SAMPLER(S) - PLEASE PRINT/SIGN NAME: Alex Villhust
 TURNAROUND TIME REQUIRED: 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED: STD LEVEL II LEVEL III LEVEL IV EDD OTHER

# Containers & Preservatives		TCL VOCs	1,4-Dioxane (Sims)	Certifications		
NONE	HCl				HNO ₃	H ₂ SO ₄
				<input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water		
				<input type="checkbox"/> DoD <input type="checkbox"/> NPDES		
				Project Locations		
				<input type="checkbox"/> Detroit <input type="checkbox"/> New York		
				<input type="checkbox"/> Other		
				Special Instructions		

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

MERIT LAB NO. FOR LAB USE ONLY	YEAR 2016		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives														
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER								
74010.01	6/9/16	11:40	SB-AS.2-NV137-65-70	GW	3		3													
.02	6/9/16	11:35	SB-AS.3-00141-58-63	GW	3		3													
.03	6/9/16	12:53	SB-AS.3-00141-63-68	GW	3		3													
.04	6/9/16	14:00	SB-AS.3-PA125-62-67	GW	3		3													

cc: jessewright@arcadis.com
 alex.villhust@arcadis.com

RELINQUISHED BY: Katlyn Vart / Arcadis Sampler
 RECEIVED BY: [Signature]
 DATE: 6/9/16 TIME: 17:33

RELINQUISHED BY: Merit Dropbox
 RECEIVED BY: [Signature]
 SEAL NO. SEAL INTACT YES NO INITIALS: [Initials] NOTES: TEMP. ON ARRIVAL 4.2
 SEAL NO. SEAL INTACT YES NO INITIALS: [Initials]

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



Analytical Laboratory Report

Supplemental Report

Report ID: S74048.01(02)
Generated on 06/17/2016
Replaces report S74048.01(01) generated on 06/13/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S74048.01-S74048.07
Project: B0064479.2016.00102 / RACER Plant 2
Collected Date: 06/10/2016
Submitted Date/Time: 06/13/2016 08:00
Sampled by: A Villhauer/K Voet
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Supplemental Report

General Report Notes

Results relate only to items tested as received by 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.

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.

Report Narrative

Sample .07 reanalyzed and sample .02 removed from hold per client request.



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

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



Analytical Laboratory Report

Supplemental Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Supplemental Report

Sample Summary (7 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S74048.01	SB-A5.2-NQ140_65-70	Groundwater	06/10/16 11:10
S74048.02	SB-A5.2-NQ140_73-78	Groundwater	06/10/16 14:30
S74048.03	SB-A5.3-PA125_67-72	Groundwater	06/10/16 08:37
S74048.04	SB-A5.3-PV104_62-67	Groundwater	06/10/16 12:38
S74048.05	SB-A5.3-PV104_70-75	Groundwater	06/10/16 14:15
S74048.06	SB-A5.3-PV104_78-83	Groundwater	06/10/16 15:00
S74048.07	SB-A5.3-OO141_68-73	Groundwater	06/10/16 16:23



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.01
Sample Tag: SB-A5.2-NQ140_65-70
Collected Date/Time: 06/10/2016 11:10
Matrix: Groundwater
COC Reference: 098069

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc.								
Hold until notified	Completed				06/13/16 12:30	KAG		



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.02
 Sample Tag: SB-A5.2-NQ140_73-78
 Collected Date/Time: 06/10/2016 14:30
 Matrix: Groundwater
 COC Reference: 098069

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/15/16 10:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	106-93-4	
1,4-Dioxane	11	ug/L	3	SW8260B - SIM	06/14/16 18:55	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	76-13-1	
Acetone	21	ug/L	10	SW8260C	06/16/16 16:11	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/16/16 16:11	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/16/16 16:11	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/16/16 16:11	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/16/16 16:11	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	56-23-5	
Benzene	1	ug/L	1	SW8260C	06/16/16 16:11	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	10061-01-5	
Toluene	10	ug/L	1	SW8260C	06/16/16 16:11	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	124-48-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.02 (continued)

Sample Tag: SB-A5.2-NQ140_73-78

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/16/16 16:11	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/16/16 16:11	JGH	120-82-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.03
Sample Tag: SB-A5.3-PA125_67-72
Collected Date/Time: 06/10/2016 08:37
Matrix: Groundwater
COC Reference: 098069

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc.								
Hold until notified	Completed				06/13/16 12:30	KAG		



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.04
Sample Tag: SB-A5.3-PV104_62-67
Collected Date/Time: 06/10/2016 12:38
Matrix: Groundwater
COC Reference: 098069

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc. Hold until notified	Completed				06/13/16 12:30	KAG		



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.05
Sample Tag: SB-A5.3-PV104_70-75
Collected Date/Time: 06/10/2016 14:15
Matrix: Groundwater
COC Reference: 098069

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc. Hold until notified	Completed				06/13/16 12:30	KAG		



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.06
Sample Tag: SB-A5.3-PV104_78-83
Collected Date/Time: 06/10/2016 15:00
Matrix: Groundwater
COC Reference: 098069

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Other / Misc.								
Hold until notified	Completed				06/13/16 12:30	KAG		



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.07
 Sample Tag: SB-A5.3-OO141_68-73
 Collected Date/Time: 06/10/2016 16:23
 Matrix: Groundwater
 COC Reference: 098069

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	>2	STD Units		N/A	06/13/16 15:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	96-12-8	R
1,2-Dibromo-3-chloropropane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	96-12-8	
1,2-Dibromoethane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	106-93-4	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	106-93-4	R
1,4-Dioxane	59	ug/L	3	SW8260B - SIM	06/10/16 19:42	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	76-13-1	R
Acetone	19	ug/L	10	SW8260C	06/13/16 15:54	JGH	67-64-1	BR
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-15-0	R
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/13/16 15:54	JGH	79-20-9	R
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	1634-04-4	R
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/13/16 15:54	JGH	78-93-3	R
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-71-8	R
Chloromethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	74-87-3	R
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-01-4	R
Bromomethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	74-83-9	R
Chloroethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-00-3	R
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-69-4	R
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-35-4	R
Methylene chloride	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-09-2	R
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	156-60-5	R
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-34-3	R
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	156-59-2	R
Chloroform	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	67-66-3	R
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	71-55-6	R
Cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	110-82-7	R
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/13/16 15:54	JGH	108-10-1	R
2-Hexanone	Not detected	ug/L	10	SW8260C	06/13/16 15:54	JGH	591-78-6	R
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	56-23-5	R
Benzene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	71-43-2	R
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	107-06-2	R
Trichloroethene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	79-01-6	R
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	78-87-5	R
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-27-4	R
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	108-87-2	R
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	10061-01-5	R
Toluene	2	ug/L	1	SW8260C	06/13/16 15:54	JGH	108-88-3	R

R-Preliminary result

B-Compound also found in associated method blank



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.07 (continued)

Sample Tag: SB-A5.3-OO141_68-73

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	10061-02-6	R
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	79-00-5	R
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	127-18-4	R
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	124-48-1	R
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	108-90-7	R
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	79-34-5	R
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	100-41-4	R
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/13/16 15:54	JGH		R
o-Xylene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	95-47-6	R
Styrene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	100-42-5	R
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	98-82-8	R
Bromoform	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	75-25-2	R
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	541-73-1	R
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	106-46-7	R
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	95-50-1	R
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/13/16 15:54	JGH	120-82-1	R
TCL Volatile Organics 8260 (Replicate 01)								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	76-13-1	
Acetone	12	ug/L	10	SW8260C	06/14/16 13:34	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 13:34	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 13:34	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 13:34	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 13:34	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	10061-01-5	

R-Preliminary result



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S74048.07 (continued)

Sample Tag: SB-A5.3-OO141_68-73

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (Replicate 01) (continued)								
Toluene	2	ug/L	1	SW8260C	06/14/16 13:34	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 13:34	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 13:34	JGH	120-82-1	



Merit
Laboratories, Inc.

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

C.O.C. PAGE # 1 OF 1

098069

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Randy Christensen
 COMPANY: Arccadis
 ADDRESS: 28550 Cabot Dr., Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.: B0064479.2016.00102
 E-MAIL ADDRESS: randy.christensen@arccadis.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: B0064479.2016.00102/RACER Plant 2 SAMPLER(S) - PLEASE PRINT/SIGN NAME: Alex Villhauer / Keithlyn Voot
 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 <u>2016</u>		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	TCL VOCs	1,4-Dioxane (SINS)	Held	Certifications		Project Locations		Special Instructions
	DATE	TIME														<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	
<u>74048.01</u>	<u>6/10</u>	<u>11:10</u>	<u>SB-A5.2-NQ140-65-70</u>	<u>GW</u>	<u>3</u>		<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					CC: jesse.wright@arccadis.com, alex.villhauer@arccadis.com
<u>.02</u>	<u>6/10</u>	<u>14:30</u>	<u>SB-A5.2-NQ140-73-78</u>	<u>GW</u>	<u>3</u>		<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
<u>.03</u>	<u>6/10</u>	<u>8:37</u>	<u>SB-A5.3-PA125-67-72</u>	<u>GW</u>	<u>3</u>		<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
<u>.04</u>	<u>6/10</u>	<u>12:38</u>	<u>SB-A5.3-PV104-62-67</u>	<u>GW</u>	<u>3</u>		<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
<u>.05</u>	<u>6/10</u>	<u>14:15</u>	<u>SB-A5.3-PV104-70-75</u>	<u>GW</u>	<u>2</u>		<u>2</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
<u>.06</u>	<u>6/10</u>	<u>15:00</u>	<u>SB-A5.3-PV104-78-83</u>	<u>GW</u>	<u>3</u>		<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
<u>.07</u>	<u>6/10</u>	<u>16:23</u>	<u>SB-A5.3-00141-68-73</u>	<u>GW</u>	<u>3</u>		<u>3</u>						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

RELINQUISHED BY: Keithlyn Voot Sampler DATE: 6/10/16 TIME: 17:18
 RECEIVED BY: [Signature] DATE: 6/10/16 TIME: 17:18
 RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:

RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:
 SEAL NO. SEAL INTACT YES NO INITIALS: NOTES: TEMP. ON ARRIVAL: 5.2
 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: S74052.01(01)
Generated on 06/21/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S74052.01-S74052.05
Project: B0064479.2016.00102 / RACER Lansing Plant 2
Collected Date: 06/06/2016 - 06/09/2016
Submitted Date/Time: 06/13/2016 08:00
Sampled by: Alex Villhauer
P.O. #: B0064479.2016.00102

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
- 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

Results relate only to items tested as received by 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.

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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
SW5035A/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5035A Revision 1 July 2002
SW8260B	SW 846 Method 8260B Revision 2 December 1996
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S74052.01	SB-A5.2-NQ140_36	Soil	06/09/16 14:59
S74052.02	SB-A5.2-OE130_37	Soil	06/06/16 14:49
S74052.03	SB-A5.2-OE130_28	Soil	06/06/16 14:19
S74052.04	SB-A5.2-OB134_1	Soil	06/07/16 13:22
S74052.05	SB-A5.2-OB134_35	Soil	06/07/16 14:53



Analytical Laboratory Report

Lab Sample ID: S74052.01
 Sample Tag: SB-A5.2-NQ140_36
 Collected Date/Time: 06/09/2016 14:59
 Matrix: Soil
 COC Reference: 098068

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/kg	50	SW8260B	06/20/16 14:22	JGH	96-12-8	T
1,2-Dibromoethane	Not detected	ug/kg	20	SW8260C	06/20/16 14:22	JGH	106-93-4	T
1,4-Dioxane	Not detected	ug/kg	200	SW8260B - SIM	06/17/16 17:54	JGH	123-91-1	T
TCL Volatile Organics HighLevel 5035/8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	76-13-1	T
Acetone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:22	JGH	67-64-1	T
Carbon disulfide	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-15-0	T
Methyl Acetate	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:22	JGH	79-20-9	T
tert-Methyl butyl ether (MTBE)	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	1634-04-4	T
2-Butanone (MEK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:22	JGH	78-93-3	T
Dichlorodifluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-71-8	T
Chloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	74-87-3	T
Vinyl chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-01-4	T
Bromomethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	74-83-9	T
Chloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-00-3	T
Trichlorofluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-69-4	T
1,1-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-35-4	T
Methylene chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-09-2	T
trans-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	156-60-5	T
1,1-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-34-3	T
cis-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	156-59-2	T
Chloroform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	67-66-3	T
1,1,1-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	71-55-6	T
Cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	110-82-7	T
4-Methyl-2-pentanone (MIBK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:22	JGH	108-10-1	T
2-Hexanone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:22	JGH	591-78-6	T
Carbon tetrachloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	56-23-5	T
Benzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	71-43-2	T
1,2-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	107-06-2	T
Trichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	79-01-6	T
1,2-Dichloropropane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	78-87-5	T
Bromodichloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-27-4	T
Methyl cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	108-87-2	T
cis-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	10061-01-5	T
Toluene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	108-88-3	T
trans-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	10061-02-6	T
1,1,2-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	79-00-5	T
Tetrachloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	127-18-4	T
Dibromochloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	124-48-1	T
Chlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	108-90-7	T
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	79-34-5	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.01 (continued)

Sample Tag: SB-A5.2-NQ140_36

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics HighLevel 5035/8260 (continued)								
Ethylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	100-41-4	T
p,m-Xylene	Not detected	ug/kg	100	SW5035A/8260C	06/20/16 14:22	JGH		T
o-Xylene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	95-47-6	T
Styrene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	100-42-5	T
Isopropylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	98-82-8	T
Bromoform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	75-25-2	T
1,3-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	541-73-1	T
1,4-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	106-46-7	T
1,2-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	95-50-1	T
1,2,4-Trichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:22	JGH	120-82-1	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.02
 Sample Tag: SB-A5.2-OE130_37
 Collected Date/Time: 06/06/2016 14:49
 Matrix: Soil
 COC Reference: 098068

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/kg	50	SW8260B	06/20/16 14:42	JGH	96-12-8	T
1,2-Dibromoethane	Not detected	ug/kg	20	SW8260C	06/20/16 14:42	JGH	106-93-4	T
1,4-Dioxane	2,000	ug/kg	200	SW8260B - SIM	06/17/16 18:13	JGH	123-91-1	T
TCL Volatile Organics HighLevel 5035/8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	76-13-1	T
Acetone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:42	JGH	67-64-1	T
Carbon disulfide	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-15-0	T
Methyl Acetate	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:42	JGH	79-20-9	T
tert-Methyl butyl ether (MTBE)	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	1634-04-4	T
2-Butanone (MEK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:42	JGH	78-93-3	T
Dichlorodifluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-71-8	T
Chloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	74-87-3	T
Vinyl chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-01-4	T
Bromomethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	74-83-9	T
Chloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-00-3	T
Trichlorofluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-69-4	T
1,1-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-35-4	T
Methylene chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-09-2	T
trans-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	156-60-5	T
1,1-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-34-3	T
cis-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	156-59-2	T
Chloroform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	67-66-3	T
1,1,1-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	71-55-6	T
Cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	110-82-7	T
4-Methyl-2-pentanone (MIBK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:42	JGH	108-10-1	T
2-Hexanone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 14:42	JGH	591-78-6	T
Carbon tetrachloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	56-23-5	T
Benzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	71-43-2	T
1,2-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	107-06-2	T
Trichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	79-01-6	T
1,2-Dichloropropane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	78-87-5	T
Bromodichloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-27-4	T
Methyl cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	108-87-2	T
cis-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	10061-01-5	T
Toluene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	108-88-3	T
trans-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	10061-02-6	T
1,1,2-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	79-00-5	T
Tetrachloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	127-18-4	T
Dibromochloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	124-48-1	T
Chlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	108-90-7	T
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	79-34-5	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.02 (continued)

Sample Tag: SB-A5.2-OE130_37

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics HighLevel 5035/8260 (continued)								
Ethylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	100-41-4	T
p,m-Xylene	Not detected	ug/kg	100	SW5035A/8260C	06/20/16 14:42	JGH		T
o-Xylene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	95-47-6	T
Styrene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	100-42-5	T
Isopropylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	98-82-8	T
Bromoform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	75-25-2	T
1,3-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	541-73-1	T
1,4-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	106-46-7	T
1,2-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	95-50-1	T
1,2,4-Trichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 14:42	JGH	120-82-1	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.03
 Sample Tag: SB-A5.2-OE130_28
 Collected Date/Time: 06/06/2016 14:19
 Matrix: Soil
 COC Reference: 098068

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/kg	50	SW8260B	06/20/16 15:02	JGH	96-12-8	T
1,2-Dibromoethane	Not detected	ug/kg	20	SW8260C	06/20/16 15:02	JGH	106-93-4	T
1,4-Dioxane	500	ug/kg	200	SW8260B - SIM	06/17/16 18:31	JGH	123-91-1	T

TCL Volatile Organics HighLevel 5035/8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	76-13-1	T
Acetone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:02	JGH	67-64-1	T
Carbon disulfide	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-15-0	T
Methyl Acetate	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:02	JGH	79-20-9	T
tert-Methyl butyl ether (MTBE)	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	1634-04-4	T
2-Butanone (MEK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:02	JGH	78-93-3	T
Dichlorodifluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-71-8	T
Chloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	74-87-3	T
Vinyl chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-01-4	T
Bromomethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	74-83-9	T
Chloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-00-3	T
Trichlorofluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-69-4	T
1,1-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-35-4	T
Methylene chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-09-2	T
trans-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	156-60-5	T
1,1-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-34-3	T
cis-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	156-59-2	T
Chloroform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	67-66-3	T
1,1,1-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	71-55-6	T
Cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	110-82-7	T
4-Methyl-2-pentanone (MIBK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:02	JGH	108-10-1	T
2-Hexanone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:02	JGH	591-78-6	T
Carbon tetrachloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	56-23-5	T
Benzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	71-43-2	T
1,2-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	107-06-2	T
Trichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	79-01-6	T
1,2-Dichloropropane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	78-87-5	T
Bromodichloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-27-4	T
Methyl cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	108-87-2	T
cis-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	10061-01-5	T
Toluene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	108-88-3	T
trans-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	10061-02-6	T
1,1,2-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	79-00-5	T
Tetrachloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	127-18-4	T
Dibromochloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	124-48-1	T
Chlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	108-90-7	T
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	79-34-5	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.03 (continued)

Sample Tag: SB-A5.2-OE130_28

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics HighLevel 5035/8260 (continued)								
Ethylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	100-41-4	T
p,m-Xylene	Not detected	ug/kg	100	SW5035A/8260C	06/20/16 15:02	JGH		T
o-Xylene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	95-47-6	T
Styrene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	100-42-5	T
Isopropylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	98-82-8	T
Bromoform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	75-25-2	T
1,3-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	541-73-1	T
1,4-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	106-46-7	T
1,2-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	95-50-1	T
1,2,4-Trichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:02	JGH	120-82-1	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.04
 Sample Tag: SB-A5.2-OB134_1
 Collected Date/Time: 06/07/2016 13:22
 Matrix: Soil
 COC Reference: 098068

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/kg	50	SW8260B	06/20/16 15:23	JGH	96-12-8	T
1,2-Dibromoethane	Not detected	ug/kg	20	SW8260C	06/20/16 15:23	JGH	106-93-4	T
1,4-Dioxane	400	ug/kg	200	SW8260B - SIM	06/17/16 18:49	JGH	123-91-1	T
TCL Volatile Organics HighLevel 5035/8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	76-13-1	T
Acetone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:23	JGH	67-64-1	T
Carbon disulfide	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-15-0	T
Methyl Acetate	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:23	JGH	79-20-9	T
tert-Methyl butyl ether (MTBE)	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	1634-04-4	T
2-Butanone (MEK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:23	JGH	78-93-3	T
Dichlorodifluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-71-8	T
Chloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	74-87-3	T
Vinyl chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-01-4	T
Bromomethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	74-83-9	T
Chloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-00-3	T
Trichlorofluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-69-4	T
1,1-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-35-4	T
Methylene chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-09-2	T
trans-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	156-60-5	T
1,1-Dichloroethane	760	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-34-3	T
cis-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	156-59-2	T
Chloroform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	67-66-3	T
1,1,1-Trichloroethane	330	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	71-55-6	T
Cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	110-82-7	T
4-Methyl-2-pentanone (MIBK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:23	JGH	108-10-1	T
2-Hexanone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:23	JGH	591-78-6	T
Carbon tetrachloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	56-23-5	T
Benzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	71-43-2	T
1,2-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	107-06-2	T
Trichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	79-01-6	T
1,2-Dichloropropane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	78-87-5	T
Bromodichloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-27-4	T
Methyl cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	108-87-2	T
cis-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	10061-01-5	T
Toluene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	108-88-3	T
trans-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	10061-02-6	T
1,1,2-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	79-00-5	T
Tetrachloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	127-18-4	T
Dibromochloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	124-48-1	T
Chlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	108-90-7	T
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	79-34-5	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.04 (continued)

Sample Tag: SB-A5.2-OB134_1

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics HighLevel 5035/8260 (continued)								
Ethylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	100-41-4	T
p,m-Xylene	Not detected	ug/kg	100	SW5035A/8260C	06/20/16 15:23	JGH		T
o-Xylene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	95-47-6	T
Styrene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	100-42-5	T
Isopropylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	98-82-8	T
Bromoform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	75-25-2	T
1,3-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	541-73-1	T
1,4-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	106-46-7	T
1,2-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	95-50-1	T
1,2,4-Trichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:23	JGH	120-82-1	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.05
 Sample Tag: SB-A5.2-OB134_35
 Collected Date/Time: 06/07/2016 14:53
 Matrix: Soil
 COC Reference: 098068

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles								
1,2-Dibromo-3-chloropropane	Not detected	ug/kg	50	SW8260B	06/20/16 15:44	JGH	96-12-8	T
1,2-Dibromoethane	Not detected	ug/kg	20	SW8260C	06/20/16 15:44	JGH	106-93-4	T
1,4-Dioxane	900	ug/kg	200	SW8260B - SIM	06/17/16 19:07	JGH	123-91-1	T
TCL Volatile Organics HighLevel 5035/8260								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	76-13-1	T
Acetone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:44	JGH	67-64-1	T
Carbon disulfide	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-15-0	T
Methyl Acetate	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:44	JGH	79-20-9	T
tert-Methyl butyl ether (MTBE)	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	1634-04-4	T
2-Butanone (MEK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:44	JGH	78-93-3	T
Dichlorodifluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-71-8	T
Chloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	74-87-3	T
Vinyl chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-01-4	T
Bromomethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	74-83-9	T
Chloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-00-3	T
Trichlorofluoromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-69-4	T
1,1-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-35-4	T
Methylene chloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-09-2	T
trans-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	156-60-5	T
1,1-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-34-3	T
cis-1,2-Dichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	156-59-2	T
Chloroform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	67-66-3	T
1,1,1-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	71-55-6	T
Cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	110-82-7	T
4-Methyl-2-pentanone (MIBK)	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:44	JGH	108-10-1	T
2-Hexanone	Not detected	ug/kg	500	SW5035A/8260C	06/20/16 15:44	JGH	591-78-6	T
Carbon tetrachloride	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	56-23-5	T
Benzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	71-43-2	T
1,2-Dichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	107-06-2	T
Trichloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	79-01-6	T
1,2-Dichloropropane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	78-87-5	T
Bromodichloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-27-4	T
Methyl cyclohexane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	108-87-2	T
cis-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	10061-01-5	T
Toluene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	108-88-3	T
trans-1,3-Dichloropropene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	10061-02-6	T
1,1,2-Trichloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	79-00-5	T
Tetrachloroethene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	127-18-4	T
Dibromochloromethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	124-48-1	T
Chlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	108-90-7	T
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	79-34-5	T

T-No correction for total solids



Analytical Laboratory Report

Lab Sample ID: S74052.05 (continued)

Sample Tag: SB-A5.2-OB134_35

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics HighLevel 5035/8260 (continued)								
Ethylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	100-41-4	T
p,m-Xylene	Not detected	ug/kg	100	SW5035A/8260C	06/20/16 15:44	JGH		T
o-Xylene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	95-47-6	T
Styrene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	100-42-5	T
Isopropylbenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	98-82-8	T
Bromoform	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	75-25-2	T
1,3-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	541-73-1	T
1,4-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	106-46-7	T
1,2-Dichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	95-50-1	T
1,2,4-Trichlorobenzene	Not detected	ug/kg	50	SW5035A/8260C	06/20/16 15:44	JGH	120-82-1	T

T-No correction for total solids



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

098068

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Randy Christensen
 COMPANY: Arcadis
 ADDRESS: 28550 Cabot Drive, Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 248-994-2240 FAX NO.: 248-994-2240 P.O. NO.: B0064479.2016.00102
 E-MAIL ADDRESS: Randy.Christensen@arcadis.com QUOTE NO.:

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

PROJECT NO./NAME: B0064479.2016.00102/RACER Lansing P2 SAMPLER(S) - PLEASE PRINT/SIGN NAME: Alex Villhena
 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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR <u>2016</u>		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								OTHER	Certifications	Project Locations	Special Instructions
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH						
<u>74052</u>	<u>6/9</u>	<u>20:11</u>	<u>SB-A5.2-NQ140-30</u>	<u>S</u>	<u>1</u>												<u>Confirm VOCs w/ Jesse Wright Jesse.wright@arcadis.com</u>
<u>.026</u>	<u>6/7</u>	<u>16:16</u>	<u>SB-A5.2-OE130-37</u>	<u>S</u>	<u>1</u>												
<u>.030</u>	<u>6/7</u>	<u>15:45</u>	<u>SB-A5.2-OE130-28</u>	<u>S</u>	<u>1</u>												
<u>.040</u>	<u>6/8</u>	<u>10:28</u>	<u>SB-A5.2-OB134-1</u>	<u>S</u>	<u>1</u>												
<u>.050</u>	<u>6/8</u>	<u>12:13</u>	<u>SB-A5.2-OB134-35</u>	<u>S</u>	<u>1</u>												

1,4 Dioxane (SIMS)
TCL VOCs

Hold remainder

RELINQUISHED BY: [Signature] DATE: 6/10/16 TIME: 17:18
 RECEIVED BY: [Signature] DATE: 6/10/16 TIME: 17:18
 RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:

RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:
 SEAL NO. SEAL INTACT YES NO INITIALS: NOTES: TEMP. ON ARRIVAL: 5.2
 SEAL NO. SEAL INTACT YES NO INITIALS:



Analytical Laboratory Report

Report ID: S74066.01(01)
Generated on 06/14/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S74066.01-S74066.04
Project: B0064479.2016.00102 / RACER Lansing P2
Collected Date: 06/13/2016
Submitted Date/Time: 06/14/2016 08:00
Sampled by: A Villhauer/K Voet
P.O. #: B0064479.2016.00102

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
- 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

Results relate only to items tested as received by 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.

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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S74066.01	SB-P2-PP85-60-65	Groundwater	06/13/16 11:45
S74066.02	SB-P2-PP85-68-73	Groundwater	06/13/16 13:00
S74066.03	SB-A5.3-OR159_62-67	Groundwater	06/13/16 11:42
S74066.04	SB-A5.3-OR159_70-75	Groundwater	06/13/16 13:20



Analytical Laboratory Report

Lab Sample ID: S74066.01
 Sample Tag: SB-P2-PP85-60-65
 Collected Date/Time: 06/13/2016 11:45
 Matrix: Groundwater
 COC Reference: 098618

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/14/16 12:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/14/16 11:14	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/14/16 10:53	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 10:53	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 10:53	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	156-59-2	
Chloroform	2	ug/L	1	SW8260C	06/14/16 10:53	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 10:53	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 10:53	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	10061-01-5	
Toluene	3	ug/L	1	SW8260C	06/14/16 10:53	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74066.01 (continued)

Sample Tag: SB-P2-PP85-60-65

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 10:53	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 10:53	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74066.02
 Sample Tag: SB-P2-PP85-68-73
 Collected Date/Time: 06/13/2016 13:00
 Matrix: Groundwater
 COC Reference: 098618

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/14/16 12:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/14/16 11:34	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/14/16 11:16	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 11:16	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 11:16	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	156-59-2	
Chloroform	1	ug/L	1	SW8260C	06/14/16 11:16	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 11:16	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 11:16	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	10061-01-5	
Toluene	1	ug/L	1	SW8260C	06/14/16 11:16	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74066.02 (continued)

Sample Tag: SB-P2-PP85-68-73

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 11:16	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:16	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74066.03
 Sample Tag: SB-A5.3-OR159_62-67
 Collected Date/Time: 06/13/2016 11:42
 Matrix: Groundwater
 COC Reference: 098618

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/14/16 12:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/14/16 11:54	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/14/16 11:39	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 11:39	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 11:39	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	156-59-2	
Chloroform	1	ug/L	1	SW8260C	06/14/16 11:39	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 11:39	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 11:39	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	10061-01-5	
Toluene	2	ug/L	1	SW8260C	06/14/16 11:39	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74066.03 (continued)

Sample Tag: SB-A5.3-OR159_62-67

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 11:39	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 11:39	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74066.04
 Sample Tag: SB-A5.3-OR159_70-75
 Collected Date/Time: 06/13/2016 13:20
 Matrix: Groundwater
 COC Reference: 098618

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.9	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	>2	STD Units		N/A	06/14/16 12:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	96-12-8	S
1,2-Dibromo-3-chloropropane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	96-12-8	
1,2-Dibromoethane (Replicate 01)	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	106-93-4	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	106-93-4	S
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/14/16 12:17	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/14/16 12:04	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 12:04	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 12:04	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 12:04	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 12:04	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	10061-02-6	

S-Surrogate recovery outside of control limits



Analytical Laboratory Report

Lab Sample ID: S74066.04 (continued)

Sample Tag: SB-A5.3-OR159_70-75

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	124-48-1	S
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	108-90-7	S
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	79-34-5	S
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	100-41-4	S
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 12:04	JGH		S
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	95-47-6	S
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	100-42-5	S
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	98-82-8	S
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	75-25-2	S
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	541-73-1	S
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	106-46-7	S
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	95-50-1	S
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:04	JGH	120-82-1	S
TCL Volatile Organics 8260 (Replicate 01)								
1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/14/16 12:53	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 12:53	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 12:53	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 12:53	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 12:53	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	108-88-3	

S-Surrogate recovery outside of control limits



Analytical Laboratory Report

Lab Sample ID: S74066.04 (continued)

Sample Tag: SB-A5.3-OR159_70-75

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (Replicate 01) (continued)								
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	124-48-1	
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 12:53	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 12:53	JGH	120-82-1	



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

098618

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Rendy Christensen
 COMPANY: Arcadis
 ADDRESS: 28550 Cabot Drive, Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.: B0064479.2016.00102
 E-MAIL ADDRESS: rendy.christensen@arcadis.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: B0064479.2016.00102 / RACER Lansing P2 SAMPLER(S) - PLEASE PRINT SIGN NAME: Alex Villheuer / Keithyn Voet
 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 <u>2016</u>		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
74066.01	6/13	11:45	SB-P2-PP85-60-65	GW	3		3					
.02	6/13	13:00	SB-P2-PP85-68-73	GW	3		3					
.03	6/13	11:42	SB-A5.3-OR159-62-67	GW	3		3					
.04	6/13	13:20	SB-A5.3-OR159-70-75	GW	3		3					

TCL VOCs
1,4-Dioxene (gms)

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

cc: jesse.wright@arcadis.com;
alex.villheuer@arcadis.com

RELINQUISHED BY: Keithyn Voet Sampler DATE: 6/13/16 TIME: 17:40
 RECEIVED BY: Judy DATE: 6/13/16 TIME: 17:40
 RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
 RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
 SEAL NO. SEAL INTACT YES NO INITIALS: NOTES: TEMP. ON ARRIVAL: 4.9
 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: S74077.01(01)
Generated on 06/15/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S74077.01-S74077.02
Project: B0064479.2016.00102 / RACER Lansing P2
Collected Date: 06/14/2016
Submitted Date/Time: 06/14/2016 14:21
Sampled by: Alex Villhauer
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Results relate only to items tested as received by 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.

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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S74077.01	SB-A5.3-PA147_68-73	Groundwater	06/14/16 10:40
S74077.02	SB-A5.3-PA147_76-81	Groundwater	06/14/16 11:35



Analytical Laboratory Report

Lab Sample ID: S74077.01
 Sample Tag: SB-A5.3-PA147_68-73
 Collected Date/Time: 06/14/2016 10:40
 Matrix: Groundwater
 COC Reference: 098619

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/15/16 10:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/14/16 16:35	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/14/16 15:53	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 15:53	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 15:53	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 15:53	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 15:53	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74077.01 (continued)

Sample Tag: SB-A5.3-PA147_68-73

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 15:53	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 15:53	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74077.02
 Sample Tag: SB-A5.3-PA147_76-81
 Collected Date/Time: 06/14/2016 11:35
 Matrix: Groundwater
 COC Reference: 098619

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/15/16 10:30	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	06/14/16 16:55	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/14/16 16:16	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/14/16 16:16	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/14/16 16:16	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/14/16 16:16	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/14/16 16:16	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74077.02 (continued)

Sample Tag: SB-A5.3-PA147_76-81

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/14/16 16:16	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/14/16 16:16	JGH	120-82-1	



Merit
Laboratories, Inc.

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

C.O.C. PAGE # 1 OF 1

098619

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Randy Christenson
 COMPANY: Arccdis
 ADDRESS: 10550 Cobot Dr., Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 248-994-2240 FAX NO.: 248-994-2241 P.O. NO.: 00064479.2016.00102
 E-MAIL ADDRESS: randy.christenson@arccdis.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: 00064479.2016.00102 / RACER Lansing P2 SAMPLER(S) - PLEASE PRINT/SIGN NAME: Alex Villhauer
 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

MERIT LAB NO. FOR LAB USE ONLY	YEAR 2016		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives														
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeQH	OTHER								
74077.01	6/14	10:40	SB-AS.3-PA147-68-73	GW	3		3													
.02	6/14	11:35	SB-AS.3-PA147-76-81	GW	3		3													

1,4-Dioxane (SMP)
TCL VOCs

CC: jesse.wright@arccdis.com;
alex.vilhauer@arccdis.com

RELINQUISHED BY: *Cal Vall* Arccdis Sampler DATE: 6/14/16 TIME: 13:53
 RECEIVED BY: *Freida Murshak* DATE: 6/14/16 TIME: 13:53
 RELINQUISHED BY: *Freida Murshak* DATE: 6/14/16 TIME: 14:21
 RECEIVED BY: *J. Johnson* DATE: 4/14/16 TIME: 14:21

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

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



Analytical Laboratory Report

Report ID: S74170.01(01)
Generated on 06/20/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S74170.01
Project: B0064479.2016.00102 / RACER Lansing P2
Collected Date: 06/15/2016
Submitted Date/Time: 06/17/2016 12:25
Sampled by: Alex Villhauer
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Results relate only to items tested as received by 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.

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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
SM2540B	Standard Method 2540 B 20th Edition
SW5035A/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5035A Revision 1 July 2002
SW8260B	SW 846 Method 8260B Revision 2 December 1996
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S74170.01	SB-A5.2-NG117_1.5	Soil	06/15/16 10:00



Analytical Laboratory Report

Lab Sample ID: S74170.01
 Sample Tag: SB-A5.2-NG117_1.5
 Collected Date/Time: 06/15/2016 10:00
 Matrix: Soil
 COC Reference: 098620

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	6.3	IR
1	40ml Glass	None	Yes	6.3	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Inorganics

Total Solids	87	%	1	SM2540B	06/19/16 20:15	JBL		
--------------	----	---	---	---------	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/kg	60	SW8260B	06/20/16 13:22	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/kg	30	SW8260C	06/20/16 13:22	JGH	106-93-4	M
1,4-Dioxane	Not detected	ug/kg	200	SW8260B - SIM	06/17/16 19:26	JGH	123-91-1	

TCL Volatile Organics HighLevel 5035/8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	76-13-1	
Acetone	Not detected	ug/kg	650	SW5035A/8260C	06/20/16 13:22	JGH	67-64-1	
Carbon disulfide	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-15-0	
Methyl Acetate	Not detected	ug/kg	650	SW5035A/8260C	06/20/16 13:22	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/kg	650	SW5035A/8260C	06/20/16 13:22	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-71-8	
Chloromethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	74-87-3	
Vinyl chloride	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-01-4	
Bromomethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	74-83-9	
Chloroethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-35-4	
Methylene chloride	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	156-59-2	
Chloroform	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	71-55-6	
Cyclohexane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/kg	650	SW5035A/8260C	06/20/16 13:22	JGH	108-10-1	
2-Hexanone	Not detected	ug/kg	650	SW5035A/8260C	06/20/16 13:22	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	56-23-5	
Benzene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	107-06-2	
Trichloroethene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	10061-01-5	
Toluene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	79-00-5	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S74170.01 (continued)

Sample Tag: SB-A5.2-NG117_1.5

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics HighLevel 5035/8260 (continued)								
Tetrachloroethene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	124-48-1	
Chlorobenzene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	79-34-5	
Ethylbenzene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	100-41-4	
p,m-Xylene	Not detected	ug/kg	100	SW5035A/8260C	06/20/16 13:22	JGH		
o-Xylene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	95-47-6	
Styrene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	98-82-8	
Bromoform	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/kg	60	SW5035A/8260C	06/20/16 13:22	JGH	120-82-1	



Merit
Laboratories, Inc.

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

C.O.C. PAGE # 1 OF 1

098620

REPORT TO **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME <u>Randy Christensen</u>				CONTACT NAME <input checked="" type="checkbox"/> SAME			
COMPANY <u>Arccdis</u>				COMPANY			
ADDRESS <u>10550 Cabot Dr., suite 500</u>				ADDRESS			
CITY <u>Novi</u>		STATE <u>MI</u>	ZIP CODE <u>48377</u>	CITY		STATE	ZIP CODE
PHONE NO. <u>248-994-2240</u>	FAX NO. <u>248-994-2241</u>	P.O. NO. <u>B0064479.2016.00102</u>		PHONE NO.		E-MAIL ADDRESS	
E-MAIL ADDRESS <u>randy.christensen@arccdis.com</u>				E-MAIL ADDRESS			
QUOTE NO.				ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)			

PROJECT NO./NAME <u>B0064479.2016.00102 / RACER Lansing P2</u>			SAMPLER(S) - PLEASE PRINT/SIGN NAME <u>Alex Villhauer</u>										Certifications	
TURNAROUND TIME REQUIRED <input checked="" type="checkbox"/> 1 DAY <input type="checkbox"/> 2 DAYS <input type="checkbox"/> 3 DAYS <input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> OTHER													<input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water	
DELIVERABLES REQUIRED <input checked="" type="checkbox"/> STD <input type="checkbox"/> LEVEL II <input type="checkbox"/> LEVEL III <input type="checkbox"/> LEVEL IV <input type="checkbox"/> EDD <input type="checkbox"/> OTHER													<input type="checkbox"/> DoD <input type="checkbox"/> NPDES	
MATRIX CODE: GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR W=WASTE			# Containers & Preservatives										Project Locations	
													<input type="checkbox"/> Detroit <input type="checkbox"/> New York	
													<input type="checkbox"/> Other	
													Special Instructions	
													cc: jesse.wright@arccdis.com, alex.vilhauer@arccdis.com	
													* Characterization sample/no ice	
													* 24 hr turn	

RELINQUISHED BY: <u>[Signature]</u> Arccdis <input checked="" type="checkbox"/> Sampler		DATE <u>6/17/16</u>	TIME <u>11:30</u>	RELINQUISHED BY: <u>[Signature]</u> Merck		DATE <u>6/17/16</u>	TIME <u>11:30</u>		
RECEIVED BY: <u>[Signature]</u> Merck		DATE <u>6/17/16</u>	TIME <u>11:30</u>	RECEIVED BY: <u>[Signature]</u> Smith		DATE <u>6/17/16</u>	TIME <u>12:25</u>		
RELINQUISHED BY:		DATE	TIME	SEAL NO.		SEAL INTACT		INITIALS	NOTES: <u>Co. 4</u>
SIGNATURE/Organization				YES <input type="checkbox"/> NO <input type="checkbox"/>					
RECEIVED BY:		DATE	TIME	SEAL NO.		SEAL INTACT		INITIALS	
SIGNATURE/Organization				YES <input type="checkbox"/> NO <input type="checkbox"/>					



Analytical Laboratory Report

Report ID: S74455.01(01)
Generated on 07/07/2016

Report to

Attention: Randy Christensen
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 810-225-1940 FAX: 248-994-2241
Email: randy.christensen@arcadis.com

Additional Contacts: Kristen Padron, Alex Villhauer, Jesse Wright

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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S74455.01-S74455.16
Project: B0064479.2016.00102
Collected Date: 06/27/2016 - 06/28/2016
Submitted Date/Time: 06/29/2016 08:10
Sampled by: Lance Rogers
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Results relate only to items tested as received by 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.

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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs
SW8260C	SW 846 Method 8260C Revision 3 August 2006



Analytical Laboratory Report

Sample Summary (16 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S74455.01	Trip Blank	Liquid	06/27/16 00:01
S74455.02	MW-16-75 (062716)	Groundwater	06/27/16 11:10
S74455.03	MW-16-78 (062716)	Groundwater	06/27/16 16:12
S74455.04	MW-16-79 (062816)	Groundwater	06/28/16 07:30
S74455.05	MW-16-74 (062816)	Groundwater	06/28/16 08:05
S74455.06	MW-16-81 (062816)	Groundwater	06/28/16 09:30
S74455.07	MW-16-77 (062816)	Groundwater	06/28/16 10:55
S74455.08	MW-16-76 (062816)	Groundwater	06/28/16 13:45
S74455.09	MW-16-82 (062816)	Groundwater	06/28/16 15:12
S74455.10	MW-16-80 (062816)	Groundwater	06/28/16 17:00
S74455.11	FB-01 (062816)	Liquid	06/28/16 17:56
S74455.12	DUP-01 (062816)	Groundwater	06/28/16 00:01
S74455.13	MW-16-83 (062816)	Groundwater	06/28/16 18:17
S74455.14	EB-01 (062816)	Liquid	06/28/16 18:45
S74455.15	MW-16-75 (062716) MS	Groundwater	06/27/16 11:10
S74455.16	MW-16-75 (062716) MSD	Groundwater	06/27/16 11:10



Analytical Laboratory Report

Lab Sample ID: S74455.01
 Sample Tag: Trip Blank
 Collected Date/Time: 06/27/2016 00:01
 Matrix: Liquid
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 12:41	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/30/16 17:41	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/30/16 17:41	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/30/16 17:41	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/30/16 17:41	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/30/16 17:41	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.01 (continued)

Sample Tag: Trip Blank

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/30/16 17:41	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 17:41	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.02
 Sample Tag: MW-16-75 (062716)
 Collected Date/Time: 06/27/2016 11:10
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/06/16 13:51	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 17:15	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 17:15	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	07/05/16 17:15	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 17:15	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 17:15	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	56-23-5	
Benzene	1	ug/L	1	SW8260C	07/05/16 17:15	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	10061-01-5	
Toluene	2	ug/L	1	SW8260C	07/05/16 17:15	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.02 (continued)

Sample Tag: MW-16-75 (062716)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 17:15	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:15	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.03
 Sample Tag: MW-16-78 (062716)
 Collected Date/Time: 06/27/2016 16:12
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 13:21	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/30/16 20:15	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/30/16 20:15	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/30/16 20:15	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/30/16 20:15	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/30/16 20:15	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	10061-01-5	
Toluene	2	ug/L	1	SW8260C	06/30/16 20:15	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.03 (continued)

Sample Tag: MW-16-78 (062716)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/30/16 20:15	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:15	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.04
 Sample Tag: MW-16-79 (062816)
 Collected Date/Time: 06/28/2016 07:30
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	106-93-4	
1,4-Dioxane	4	ug/L	3	SW8260B - SIM	07/01/16 13:41	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	76-13-1	
Acetone	41	ug/L	10	SW8260C	06/30/16 20:37	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/30/16 20:37	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/30/16 20:37	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/30/16 20:37	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/30/16 20:37	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	10061-01-5	
Toluene	1	ug/L	1	SW8260C	06/30/16 20:37	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.04 (continued)

Sample Tag: MW-16-79 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/30/16 20:37	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:37	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.05
 Sample Tag: MW-16-74 (062816)
 Collected Date/Time: 06/28/2016 08:05
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs <2 STD Units N/A 06/30/16 12:00 JML

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 14:01	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	76-13-1	
Acetone	72	ug/L	10	SW8260C	06/30/16 20:59	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/30/16 20:59	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	1634-04-4	
2-Butanone (MEK)	17	ug/L	10	SW8260C	06/30/16 20:59	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/30/16 20:59	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/30/16 20:59	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	10061-01-5	
Toluene	1	ug/L	1	SW8260C	06/30/16 20:59	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.05 (continued)

Sample Tag: MW-16-74 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/30/16 20:59	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 20:59	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.06
 Sample Tag: MW-16-81 (062816)
 Collected Date/Time: 06/28/2016 09:30
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	106-93-4	
1,4-Dioxane	100	ug/L	3	SW8260B - SIM	07/01/16 14:21	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	06/30/16 21:22	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	06/30/16 21:22	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	06/30/16 21:22	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	06/30/16 21:22	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	06/30/16 21:22	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	10061-01-5	
Toluene	3	ug/L	1	SW8260C	06/30/16 21:22	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.06 (continued)

Sample Tag: MW-16-81 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	06/30/16 21:22	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	06/30/16 21:22	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.07
 Sample Tag: MW-16-77 (062816)
 Collected Date/Time: 06/28/2016 10:55
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	106-93-4	
1,4-Dioxane	3	ug/L	3	SW8260B - SIM	07/01/16 14:41	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 17:37	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 17:37	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	1634-04-4	
2-Butanone (MEK)	37	ug/L	10	SW8260C	07/05/16 17:37	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 17:37	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 17:37	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	10061-01-5	
Toluene	5	ug/L	1	SW8260C	07/05/16 17:37	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.07 (continued)

Sample Tag: MW-16-77 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 17:37	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:37	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.08
Sample Tag: MW-16-76 (062816)
Collected Date/Time: 06/28/2016 13:45
Matrix: Groundwater
COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs <2 STD Units N/A 06/30/16 12:00 JML

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 15:01	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 17:59	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 17:59	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	07/05/16 17:59	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 17:59	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 17:59	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	10061-01-5	
Toluene	5	ug/L	1	SW8260C	07/05/16 17:59	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.08 (continued)

Sample Tag: MW-16-76 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 17:59	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 17:59	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.09
 Sample Tag: MW-16-82 (062816)
 Collected Date/Time: 06/28/2016 15:12
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 15:21	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 18:20	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 18:20	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	07/05/16 18:20	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 18:20	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 18:20	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	10061-01-5	
Toluene	2	ug/L	1	SW8260C	07/05/16 18:20	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.09 (continued)

Sample Tag: MW-16-82 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 18:20	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:20	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.10
 Sample Tag: MW-16-80 (062816)
 Collected Date/Time: 06/28/2016 17:00
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs <2 STD Units N/A 06/30/16 12:00 JML

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 15:41	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 18:42	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 18:42	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	07/05/16 18:42	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 18:42	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 18:42	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	10061-01-5	
Toluene	5	ug/L	1	SW8260C	07/05/16 18:42	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.10 (continued)

Sample Tag: MW-16-80 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 18:42	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 18:42	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.11
Sample Tag: FB-01 (062816)
Collected Date/Time: 06/28/2016 17:56
Matrix: Liquid
COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 16:01	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 19:05	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 19:05	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	07/05/16 19:05	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 19:05	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 19:05	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.11 (continued)

Sample Tag: FB-01 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 19:05	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:05	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.12
 Sample Tag: DUP-01 (062816)
 Collected Date/Time: 06/28/2016 00:01
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	06/30/16 12:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 16:21	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 19:27	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 19:27	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	07/05/16 19:27	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 19:27	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 19:27	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	10061-01-5	
Toluene	5	ug/L	1	SW8260C	07/05/16 19:27	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.12 (continued)

Sample Tag: DUP-01 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 19:27	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:27	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.13
 Sample Tag: MW-16-83 (062816)
 Collected Date/Time: 06/28/2016 18:17
 Matrix: Groundwater
 COC Reference: 093090

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs <2 STD Units N/A 06/30/16 12:00 JML

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 16:41	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 19:49	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 19:49	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	07/05/16 19:49	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 19:49	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 19:49	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	10061-01-5	
Toluene	7	ug/L	1	SW8260C	07/05/16 19:49	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.13 (continued)

Sample Tag: MW-16-83 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 19:49	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 19:49	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.14
 Sample Tag: EB-01 (062816)
 Collected Date/Time: 06/28/2016 18:45
 Matrix: Liquid
 COC Reference: 093090

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	07/01/16 15:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	96-12-8	
1,2-Dibromoethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	106-93-4	
1,4-Dioxane	Not detected	ug/L	3	SW8260B - SIM	07/01/16 17:01	JGH	123-91-1	

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	76-13-1	
Acetone	Not detected	ug/L	10	SW8260C	07/05/16 20:11	JGH	67-64-1	
Carbon disulfide	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-15-0	
Methyl Acetate	Not detected	ug/L	10	SW8260C	07/05/16 20:11	JGH	79-20-9	
tert-Methyl butyl ether (MTBE)	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	1634-04-4	
2-Butanone (MEK)	Not detected	ug/L	10	SW8260C	07/05/16 20:11	JGH	78-93-3	
Dichlorodifluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-71-8	
Chloromethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	74-87-3	
Vinyl chloride	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-01-4	
Bromomethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	74-83-9	
Chloroethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-00-3	
Trichlorofluoromethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-69-4	
1,1-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-35-4	
Methylene chloride	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-09-2	
trans-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	156-60-5	
1,1-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-34-3	
cis-1,2-Dichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	156-59-2	
Chloroform	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	67-66-3	
1,1,1-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	71-55-6	
Cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	110-82-7	
4-Methyl-2-pentanone (MIBK)	Not detected	ug/L	10	SW8260C	07/05/16 20:11	JGH	108-10-1	
2-Hexanone	Not detected	ug/L	10	SW8260C	07/05/16 20:11	JGH	591-78-6	
Carbon tetrachloride	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	56-23-5	
Benzene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	71-43-2	
1,2-Dichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	107-06-2	
Trichloroethene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	79-01-6	
1,2-Dichloropropane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	78-87-5	
Bromodichloromethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-27-4	
Methyl cyclohexane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	108-87-2	
cis-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	10061-01-5	
Toluene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	108-88-3	
trans-1,3-Dichloropropene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	10061-02-6	
1,1,2-Trichloroethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	79-00-5	
Tetrachloroethene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	127-18-4	
Dibromochloromethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	124-48-1	



Analytical Laboratory Report

Lab Sample ID: S74455.14 (continued)

Sample Tag: EB-01 (062816)

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Chlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	108-90-7	
1,1,2,2-Tetrachloroethane	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	79-34-5	
Ethylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	100-41-4	
p,m-Xylene	Not detected	ug/L	2	SW8260C	07/05/16 20:11	JGH		
o-Xylene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	95-47-6	
Styrene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	100-42-5	
Isopropylbenzene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	98-82-8	
Bromoform	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	75-25-2	
1,3-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	541-73-1	
1,4-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	106-46-7	
1,2-Dichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	95-50-1	
1,2,4-Trichlorobenzene	Not detected	ug/L	1	SW8260C	07/05/16 20:11	JGH	120-82-1	



Analytical Laboratory Report

Lab Sample ID: S74455.15
 Sample Tag: MW-16-75 (062716) MS
 Collected Date/Time: 06/27/2016 11:10
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs	<2	STD Units		N/A	07/01/16 15:00	JML		
-------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,2-Dibromo-3-chloropropane	60	ug/L	1	SW8260C	07/05/16 15:02	JGH	96-12-8	1
1,2-Dibromoethane	54	ug/L	1	SW8260C	07/05/16 15:02	JGH	106-93-4	1
1,4-Dioxane	46	ug/L	3	SW8260B - SIM	07/06/16 12:31	JGH	123-91-1	1

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	39	ug/L	1	SW8260C	07/05/16 15:02	JGH	76-13-1	1
Acetone	38	ug/L	10	SW8260C	07/05/16 15:02	JGH	67-64-1	1
Carbon disulfide	46	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-15-0	1
Methyl Acetate	46	ug/L	10	SW8260C	07/05/16 15:02	JGH	79-20-9	1
tert-Methyl butyl ether (MTBE)	51	ug/L	1	SW8260C	07/05/16 15:02	JGH	1634-04-4	1
2-Butanone (MEK)	40	ug/L	10	SW8260C	07/05/16 15:02	JGH	78-93-3	1
Dichlorodifluoromethane	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-71-8	1
Chloromethane	42	ug/L	1	SW8260C	07/05/16 15:02	JGH	74-87-3	1
Vinyl chloride	44	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-01-4	1
Bromomethane	44	ug/L	1	SW8260C	07/05/16 15:02	JGH	74-83-9	1
Chloroethane	42	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-00-3	1
Trichlorofluoromethane	46	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-69-4	1
1,1-Dichloroethene	41	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-35-4	1
Methylene chloride	47	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-09-2	1
trans-1,2-Dichloroethene	46	ug/L	1	SW8260C	07/05/16 15:02	JGH	156-60-5	1
1,1-Dichloroethane	46	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-34-3	1
cis-1,2-Dichloroethene	47	ug/L	1	SW8260C	07/05/16 15:02	JGH	156-59-2	1
Chloroform	48	ug/L	1	SW8260C	07/05/16 15:02	JGH	67-66-3	1
1,1,1-Trichloroethane	49	ug/L	1	SW8260C	07/05/16 15:02	JGH	71-55-6	1
Cyclohexane	34	ug/L	1	SW8260C	07/05/16 15:02	JGH	110-82-7	1
4-Methyl-2-pentanone (MIBK)	61	ug/L	10	SW8260C	07/05/16 15:02	JGH	108-10-1	1
2-Hexanone	53	ug/L	10	SW8260C	07/05/16 15:02	JGH	591-78-6	1
Carbon tetrachloride	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	56-23-5	1
Benzene	51	ug/L	1	SW8260C	07/05/16 15:02	JGH	71-43-2	1
1,2-Dichloroethane	46	ug/L	1	SW8260C	07/05/16 15:02	JGH	107-06-2	1
Trichloroethene	49	ug/L	1	SW8260C	07/05/16 15:02	JGH	79-01-6	1
1,2-Dichloropropane	49	ug/L	1	SW8260C	07/05/16 15:02	JGH	78-87-5	1
Bromodichloromethane	52	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-27-4	1
Methyl cyclohexane	45	ug/L	1	SW8260C	07/05/16 15:02	JGH	108-87-2	1
cis-1,3-Dichloropropene	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	10061-01-5	1
Toluene	52	ug/L	1	SW8260C	07/05/16 15:02	JGH	108-88-3	1
trans-1,3-Dichloropropene	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	10061-02-6	1
1,1,2-Trichloroethane	52	ug/L	1	SW8260C	07/05/16 15:02	JGH	79-00-5	1
Tetrachloroethene	43	ug/L	1	SW8260C	07/05/16 15:02	JGH	127-18-4	1

1-Spiked at 50ug/l



Analytical Laboratory Report

Lab Sample ID: S74455.15 (continued)

Sample Tag: MW-16-75 (062716) MS

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Dibromochloromethane	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	124-48-1	1
Chlorobenzene	48	ug/L	1	SW8260C	07/05/16 15:02	JGH	108-90-7	1
1,1,2,2-Tetrachloroethane	61	ug/L	1	SW8260C	07/05/16 15:02	JGH	79-34-5	1
Ethylbenzene	51	ug/L	1	SW8260C	07/05/16 15:02	JGH	100-41-4	1
p,m-Xylene	100	ug/L	2	SW8260C	07/05/16 15:02	JGH		1
o-Xylene	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	95-47-6	1
Styrene	51	ug/L	1	SW8260C	07/05/16 15:02	JGH	100-42-5	1
Isopropylbenzene	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	98-82-8	1
Bromoform	56	ug/L	1	SW8260C	07/05/16 15:02	JGH	75-25-2	1
1,3-Dichlorobenzene	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	541-73-1	1
1,4-Dichlorobenzene	50	ug/L	1	SW8260C	07/05/16 15:02	JGH	106-46-7	1
1,2-Dichlorobenzene	51	ug/L	1	SW8260C	07/05/16 15:02	JGH	95-50-1	1
1,2,4-Trichlorobenzene	54	ug/L	1	SW8260C	07/05/16 15:02	JGH	120-82-1	1

1-Spiked at 50ug/l



Analytical Laboratory Report

Lab Sample ID: S74455.16
 Sample Tag: MW-16-75 (062716) MSD
 Collected Date/Time: 06/27/2016 11:10
 Matrix: Groundwater
 COC Reference: 093089

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs <2 STD Units N/A 07/01/16 15:00 JML

Organics - Volatiles

1,2-Dibromo-3-chloropropane	58	ug/L	1	SW8260C	07/05/16 15:25	JGH	96-12-8	1
1,2-Dibromoethane	54	ug/L	1	SW8260C	07/05/16 15:25	JGH	106-93-4	1
1,4-Dioxane	50	ug/L	3	SW8260B - SIM	07/06/16 12:51	JGH	123-91-1	1

TCL Volatile Organics 8260

1,1,2-Trichloro-1,2,2-trifluoroethane	37	ug/L	1	SW8260C	07/05/16 15:25	JGH	76-13-1	1
Acetone	42	ug/L	10	SW8260C	07/05/16 15:25	JGH	67-64-1	1
Carbon disulfide	44	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-15-0	1
Methyl Acetate	45	ug/L	10	SW8260C	07/05/16 15:25	JGH	79-20-9	1
tert-Methyl butyl ether (MTBE)	49	ug/L	1	SW8260C	07/05/16 15:25	JGH	1634-04-4	1
2-Butanone (MEK)	40	ug/L	10	SW8260C	07/05/16 15:25	JGH	78-93-3	1
Dichlorodifluoromethane	48	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-71-8	1
Chloromethane	41	ug/L	1	SW8260C	07/05/16 15:25	JGH	74-87-3	1
Vinyl chloride	42	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-01-4	1
Bromomethane	42	ug/L	1	SW8260C	07/05/16 15:25	JGH	74-83-9	1
Chloroethane	41	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-00-3	1
Trichlorofluoromethane	44	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-69-4	1
1,1-Dichloroethene	39	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-35-4	1
Methylene chloride	45	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-09-2	1
trans-1,2-Dichloroethene	43	ug/L	1	SW8260C	07/05/16 15:25	JGH	156-60-5	1
1,1-Dichloroethane	44	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-34-3	1
cis-1,2-Dichloroethene	45	ug/L	1	SW8260C	07/05/16 15:25	JGH	156-59-2	1
Chloroform	45	ug/L	1	SW8260C	07/05/16 15:25	JGH	67-66-3	1
1,1,1-Trichloroethane	47	ug/L	1	SW8260C	07/05/16 15:25	JGH	71-55-6	1
Cyclohexane	32	ug/L	1	SW8260C	07/05/16 15:25	JGH	110-82-7	1
4-Methyl-2-pentanone (MIBK)	61	ug/L	10	SW8260C	07/05/16 15:25	JGH	108-10-1	1
2-Hexanone	53	ug/L	10	SW8260C	07/05/16 15:25	JGH	591-78-6	1
Carbon tetrachloride	48	ug/L	1	SW8260C	07/05/16 15:25	JGH	56-23-5	1
Benzene	50	ug/L	1	SW8260C	07/05/16 15:25	JGH	71-43-2	1
1,2-Dichloroethane	45	ug/L	1	SW8260C	07/05/16 15:25	JGH	107-06-2	1
Trichloroethene	47	ug/L	1	SW8260C	07/05/16 15:25	JGH	79-01-6	1
1,2-Dichloropropane	48	ug/L	1	SW8260C	07/05/16 15:25	JGH	78-87-5	1
Bromodichloromethane	51	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-27-4	1
Methyl cyclohexane	42	ug/L	1	SW8260C	07/05/16 15:25	JGH	108-87-2	1
cis-1,3-Dichloropropene	48	ug/L	1	SW8260C	07/05/16 15:25	JGH	10061-01-5	1
Toluene	51	ug/L	1	SW8260C	07/05/16 15:25	JGH	108-88-3	1
trans-1,3-Dichloropropene	50	ug/L	1	SW8260C	07/05/16 15:25	JGH	10061-02-6	1
1,1,2-Trichloroethane	51	ug/L	1	SW8260C	07/05/16 15:25	JGH	79-00-5	1
Tetrachloroethene	41	ug/L	1	SW8260C	07/05/16 15:25	JGH	127-18-4	1

1-Spiked at 50ug/l



Analytical Laboratory Report

Lab Sample ID: S74455.16 (continued)

Sample Tag: MW-16-75 (062716) MSD

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Organics - Volatiles (continued)								
TCL Volatile Organics 8260 (continued)								
Dibromochloromethane	50	ug/L	1	SW8260C	07/05/16 15:25	JGH	124-48-1	1
Chlorobenzene	46	ug/L	1	SW8260C	07/05/16 15:25	JGH	108-90-7	1
1,1,2,2-Tetrachloroethane	59	ug/L	1	SW8260C	07/05/16 15:25	JGH	79-34-5	1
Ethylbenzene	49	ug/L	1	SW8260C	07/05/16 15:25	JGH	100-41-4	1
p,m-Xylene	94	ug/L	2	SW8260C	07/05/16 15:25	JGH		1
o-Xylene	47	ug/L	1	SW8260C	07/05/16 15:25	JGH	95-47-6	1
Styrene	48	ug/L	1	SW8260C	07/05/16 15:25	JGH	100-42-5	1
Isopropylbenzene	47	ug/L	1	SW8260C	07/05/16 15:25	JGH	98-82-8	1
Bromoform	56	ug/L	1	SW8260C	07/05/16 15:25	JGH	75-25-2	1
1,3-Dichlorobenzene	48	ug/L	1	SW8260C	07/05/16 15:25	JGH	541-73-1	1
1,4-Dichlorobenzene	47	ug/L	1	SW8260C	07/05/16 15:25	JGH	106-46-7	1
1,2-Dichlorobenzene	48	ug/L	1	SW8260C	07/05/16 15:25	JGH	95-50-1	1
1,2,4-Trichlorobenzene	49	ug/L	1	SW8260C	07/05/16 15:25	JGH	120-82-1	1

1-Spiked at 50ug/l



Merit
Laboratories, Inc.

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

C.O.C. PAGE # 1 OF 2

093089

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Jesse Wright
 COMPANY: ARCADIS
 ADDRESS: _____
 CITY: _____ STATE: _____ ZIP CODE: _____
 PHONE NO.: 317-236-2860 FAX NO.: _____ P.O. NO.: _____
 E-MAIL ADDRESS: Jesse.wright@arcadis.com QUOTE NO.: _____

CONTACT NAME: Randy Christensen SAME
 COMPANY: ARCADIS
 ADDRESS: 28550 Cabot Dr. suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 810.225.1940 E-MAIL ADDRESS: Randy.Christensen@arcadis.com

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: B0064779.2016.00102 SAMPLER(S) - PLEASE PRINT SIGN NAME: Lance Rojas / Julie M Rojas
 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	VOC	1,4-Dioxane	STN
	DATE	TIME													
74455.0	6-27-16	-	Trip Blank		1								X	X	
.02	6-27-16	1110	MW-16-75 (062716)	GW	9								X	X	
.03	6-27-16	1612	MW-16-78 (062716)	GW	3								X	X	
.04	6-28-16	0730	MW-16-79 (062816)	GW	3								X	X	
.05	6-28-16	0805	MW-16-74 (062816)	GW	3								X	X	
.06	6-28-16	0930	MW-16-81 (062816)	GW	3								X	X	
.07	6-28-16	1055	MW-16-77 (062816)	GW	3								X	X	
.08	6-28-16	1345	MW-16-76 (062816)	GW	3								X	X	
.09	6-28-16	1512	MW-16-82 (062816)	GW	3								X	X	
.10	6-28-16	1700	MW-16-80 (062816)	GW	3								X	X	
.11	6-28-16	1756	FB-01 (062816)		3								X	X	
.12	6-28-16	-	DUP-01 (062816)	GW	3								X	X	

RELINQUISHED BY: Julie M Rojas Sampler DATE: 6-28-16 TIME: 2045
 SIGNATURE/ORGANIZATION: ARCADIS
 RECEIVED BY: Merit overnight locker DATE: 6-28-16 TIME: 2045
 SIGNATURE/ORGANIZATION: _____

RELINQUISHED BY: Merit Drop Box DATE: _____ TIME: _____
 SIGNATURE/ORGANIZATION: _____
 RECEIVED BY: Sam Smith DATE: 6/29/16 TIME: 0810
 SIGNATURE/ORGANIZATION: _____

SEAL NO. SEAL INTACT INITIALS NOTES: TEMP. ON ARRIVAL
 YES NO
 SEAL NO. SEAL INTACT INITIALS
 YES NO
6.1

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



Merit
Laboratories, Inc.

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

C.O.C. PAGE # 2 OF 2

093090

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME *Jesse Wright*
 COMPANY *ARCADIS*
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. *317-236-2860* FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS *Jesse.Wright@arcadis.com* QUOTE NO. _____

CONTACT NAME *see page 1* SAME
 COMPANY _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP CODE _____
 PHONE NO. _____ E-MAIL ADDRESS _____

PROJECT NO./NAME *B0064779.2016-00102* SAMPLER(S) PLEASE PRINT SIGN NAME *Laurie Rogers/Henry*
 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)

Certifications
 OHIO VAP Drinking Water
 DoD NPDES

Project Locations
 Detroit New York
 Other _____

Special Instructions

MATRIX GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
 CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE 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								
	DATE	TIME																		
<i>.13</i>	<i>6-28-16</i>	<i>1817</i>	<i>MW-16-83 (062816)</i>	<i>GW</i>	<i>3</i>		<i>3</i>						<i>X</i>	<i>X</i>						
<i>.14</i>	<i>6-28-16</i>	<i>1845</i>	<i>EB-01 (062816)</i>		<i>3</i>		<i>3</i>						<i>X</i>	<i>X</i>						

Vac 1, 4-Di.oxide SIM

RELINQUISHED BY: *Laurie Rogers* Sampler DATE *6-28-16* TIME *2045*
 SIGNATURE/ORGANIZATION *Merit overnight locker*
 RECEIVED BY: _____ DATE _____ TIME _____
 SIGNATURE/ORGANIZATION _____

RELINQUISHED BY: *Merit Drop Box* DATE _____ TIME _____
 SIGNATURE/ORGANIZATION *Sam Smith*
 RECEIVED BY: _____ DATE *6/29/16* TIME *0810*
 SIGNATURE/ORGANIZATION _____

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

NOTES: *6.1* TEMP. ON ARRIVAL _____

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



Analytical Laboratory Report

Report ID: S75499.01(01)
Generated on 08/19/2016

Report to

Attention: Patrick Curry
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: N/A FAX: 248-994-2241
Email: patrick.curry@arcadis-us.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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S75499.01-S75499.02
Project: Racer Lansing Plant 2 B0064479.2016.00102
Collected Date: 08/16/2016 - 08/17/2016
Submitted Date/Time: 08/18/2016 08:45
Sampled by: Austin Westhuis
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Results relate only to items tested as received by 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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S75499.01	SB-A5.2-ND140_72-77	Water	08/17/16 17:20
S75499.02	Trip Blank	Water	08/16/16 00:01



Analytical Laboratory Report

Lab Sample ID: S75499.01
Sample Tag: SB-A5.2-ND140_72-77
Collected Date/Time: 08/17/2016 17:20
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	9.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/18/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	85	ug/L	3	SW8260B - SIM	08/18/16 14:08	JGH	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S75499.02
Sample Tag: Trip Blank
Collected Date/Time: 08/16/2016 00:01
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	9.7	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/18/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	08/18/16 13:17	JGH	123-91-1	

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Lab Work Order #

Send Results to:	Contact & Company Name: <i>Patrick Curry / Arcadis</i>		Telephone: <i>810-225-1926</i>		Preservative: <i>B</i>																			
	Address: <i>28550 Cabot Dr., Ste. 500</i>		Fax: <i>248-994-2241</i>		# of Containers: <i>3</i>																			
	City State Zip: <i>Novi, MI 48377</i>		E-mail Address: <i>Patrick.Curry@arcadis.com</i>		Container Information: <i>1</i>																			
Project Name & Location (City, State): <i>RACER Lansing Plant 2 / Lansing, MI</i>		Project #: <i>80064479.2016.00102</i>		PARAMETER ANALYSIS & METHOD																				
Sampler's Printed Name: <i>Austin Westhuis</i>		Sampler's Signature: <i>[Signature]</i>		<i>1,4-dioxane via 8260 SWM</i>																				
Sample ID		Collection																			Type (✓)		Matrix	
		Date Time		Comp Grab																				
<i>SB-AS2-N0140-72-77</i>		<i>8/17/16 1720</i>		<input checked="" type="checkbox"/>		<i>W</i>																		
<i>Trip Blank</i>		<i>8/16/16</i>		<input checked="" type="checkbox"/>		<i>W</i>																		

Keys

Preservation Key:
 A. H₂SO₄
 B. HCL
 C. HNO₃
 D. NaOH
 E. None
 F. Other: _____
 G. Other: _____
 H. Other: _____

Container Information Key:
 1. 40 ml Vial
 2. 1 L Amber
 3. 250 ml Plastic
 4. 500 ml Plastic
 5. Encore
 6. 2 oz. Glass
 7. 4 oz. Glass
 8. 8 oz. Glass
 9. Other: _____
 10. Other: _____

Matrix Key:
 SO - Soil SE - Sediment NL - NAPL/Oil
 W - Water SL - Sludge SW - Sample Wipe
 T - Tissue A - Air Other: _____

REMARKS

75499.01

.02

Special Instructions/Comments: ** 24-Hour TAT ** Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By		Received By		Relinquished By		Laboratory Received By	
Lab Name: <i>Merit</i>	Cooler Custody Seal (✓) <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Printed Name: <i>Austin Westhuis</i>	Signature: <i>[Signature]</i>	Printed Name: <i>Sam Smith</i>	Signature: <i>[Signature]</i>	Printed Name:	Signature:	Printed Name:	Signature:
<input checked="" type="checkbox"/> Cooler packed with ice (✓)	Sample Receipt: <i>9.7</i>	Firm: <i>Arcadis</i>	Date/Time: <i>8/18/16 0845</i>	Firm/Courier: <i>[Signature]</i>	Date/Time: <i>8/18/16 0845</i>	Firm/Courier:	Date/Time:	Firm:	Date/Time:
Specify Turnaround Requirements: <i>* 24 Hour TAT *</i>	Shipping Tracking #:								



Analytical Laboratory Report

Report ID: S75504.01(01)
Generated on 08/19/2016

Report to

Attention: Patrick Curry
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: N/A FAX: 248-994-2241
Email: patrick.curry@arcadis-us.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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S75504.01-S75504.03
Project: Racer Lansing Plant 2 / Lansing MI B0064479.2016.00102
Collected Date: 08/18/2016
Submitted Date/Time: 08/18/2016 11:45
Sampled by: Austin Westhuis
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Results relate only to items tested as received by 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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S75504.01	SB-A5.2-ND140_79-84	Water	08/18/16 11:10
S75504.02	Dup-01_08182016	Water	08/18/16 00:01
S75504.03	Trip Blank	Water	08/18/16 00:01



Analytical Laboratory Report

Lab Sample ID: S75504.01
Sample Tag: SB-A5.2-ND140_79-84
Collected Date/Time: 08/18/2016 11:10
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.5	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/18/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	54	ug/L	3	SW8260B - SIM	08/18/16 14:32	JGH	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S75504.02
Sample Tag: Dup-01_08182016
Collected Date/Time: 08/18/2016 00:01
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.5	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/18/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	54	ug/L	3	SW8260B - SIM	08/18/16 15:27	JGH	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S75504.03
Sample Tag: Trip Blank
Collected Date/Time: 08/18/2016 00:01
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	5.5	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/18/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	08/18/16 13:44	JGH	123-91-1	

ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Lab Work Order #

Send Results to:	Contact & Company Name: Patrick Curry / Arcadis		Telephone: 810-225-1926
	Address: 28550 Cabot Dr., Ste. 500		Fax: 248-994-2241
	City: Novi, MI	State: MI	Zip: 48933
	E-mail Address: Patrick.Curry@arcadis.com		

Preservative	B								
Filtered (✓)									
# of Containers	3								
Container Information	1								

- Keys**
- Preservation Key:**
 A. H₂SO₄
 B. HCL
 C. HNO₃
 D. NaOH
 E. None
 F. Other: _____
 G. Other: _____
 H. Other: _____
- Container Information Key:**
 1. 40 ml Vial
 2. 1 L Amber
 3. 250 ml Plastic
 4. 500 ml Plastic
 5. Encore
 6. 2 oz. Glass
 7. 4 oz. Glass
 8. 8 oz. Glass
 9. Other: _____
 10. Other: _____
- Matrix Key:**
 SO - Soil
 W - Water
 T - Tissue
 SE - Sediment
 SL - Sludge
 A - Air
 NL - NAPL/Oil
 SW - Sample Wipe
 Other: _____

Project Name/Location (City, State): RACER Lansing Plant 2 / Lansing, MI	Project #: 50064479.2016.00102
Sampler's Printed Name: Austin Westhuis	Sampler's Signature: <i>Austin Westhuis</i>

PARAMETER ANALYSIS & METHOD

Sample ID	Collection		Type (✓)		Matrix															
	Date	Time	Comp	Grab																
SB-A0.2-NA140-7984	8/18/16	1110		✓	W	✓														
Dup-01-08182016	8/18/16	—		✓	W	✓														
Trip Blank	8/18/16	—		✓	W	✓														

14-dioxane via 8260 STM

REMARKS

75504.01
.02
.03

Special Instructions/Comments: **★ 24-Hour TAT ★** Special QA/QC Instructions(✓):

Laboratory Information and Receipt		Relinquished By		Received By		Relinquished By		Laboratory Received By	
Lab Name: Merit	Cooler Custody Seal (✓) <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Printed Name: Austin Westhuis	Signature: <i>Austin Westhuis</i>	Printed Name: John Laverly	Signature: <i>John Laverly</i>	Printed Name:	Signature:	Printed Name:	Signature:
★ Cooler packed with ice (✓)		Firm: Arcadis	Date/Time: 8/18/16 1145	Firm/Courier: Merit	Date/Time: 8/18/16 13:45	Firm/Courier:	Date/Time:	Firm:	Date/Time:
Specify Turnaround Requirements: ★ 24-Hour TAT ★	Sample Receipt:								
Shipping Tracking #:	Condition/Cooler Temp: _____								



Analytical Laboratory Report

Report ID: S75536.01(01)
Generated on 08/23/2016

Report to

Attention: Patrick Curry
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: N/A FAX: 248-994-2241
Email: patrick.curry@arcadis-us.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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S75536.01-S75536.03
Project: Racer Lansing Plant 2 / Lansing MI B0064479.2016.00102
Collected Date: 08/18/2016 - 08/19/2016
Submitted Date/Time: 08/19/2016 08:32
Sampled by: Austin Westhuis
P.O. #: B0064479.2016.00102

Table of Contents

Cover Page (Page 1)
General Report Notes (Page 2)
Report Narrative (Page 2)
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

Results relate only to items tested as received by 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.

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

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S75536.01	SB-A5.2-NK140_67-72	Water	08/18/16 16:20
S75536.02	SB-A5.2-NK140_74-79	Water	08/19/16 08:15
S75536.03	Trip Blank	Water	08/18/16 00:01



Analytical Laboratory Report

Lab Sample ID: S75536.01
Sample Tag: SB-A5.2-NK140_67-72
Collected Date/Time: 08/18/2016 16:20
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	18.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/22/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	64	ug/L	3	SW8260B - SIM	08/19/16 14:51	WAT	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S75536.02
Sample Tag: SB-A5.2-NK140_74-79
Collected Date/Time: 08/19/2016 08:15
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	18.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/22/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	59	ug/L	3	SW8260B - SIM	08/19/16 15:11	WAT	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S75536.03
Sample Tag: Trip Blank
Collected Date/Time: 08/18/2016 00:01
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	18.1	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/22/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	08/19/16 14:27	WAT	123-91-1	



Analytical Laboratory Report

Supplemental Report

Report ID: S75552.01(02)
Generated on 08/25/2016
Replaces report S75552.01(01) generated on 08/24/2016

Report to

Attention: Patrick Curry
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: N/A FAX: 248-994-2241
Email: patrick.curry@arcadis-us.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:
Kevin George (kgeorge@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S75552.01-S75552.03
Project: Racer Lansing Plant 2 / Lansing MI B0064479.2016.00102
Collected Date: 08/19/2016
Submitted Date/Time: 08/19/2016 14:10
Sampled by: Austin Westhuis
P.O. #: B0064479.2016.00102

Table of Contents

- Cover Page (Page 1)
- General Report Notes (Page 2)
- Report Narrative (Page 2)
- 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

Supplemental Report

General Report Notes

Results relate only to items tested as received by 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.

Report Narrative

All analyses complete



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

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



Analytical Laboratory Report

Supplemental Report

Method Summary

Method	Version
N/A	Not Applicable
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Supplemental Report

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S75552.01	SB-A5.2-ND132_67-72	Water	08/19/16 12:30
S75552.02	SB-A5.2-ND132_74-79	Water	08/19/16 13:50
S75552.03	Trip Blank	Water	08/19/16 00:01



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S75552.01
Sample Tag: SB-A5.2-ND132_67-72
Collected Date/Time: 08/19/2016 12:30
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/22/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	191	ug/L	3	SW8260B - SIM	08/19/16 15:55	WAT	123-91-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S75552.02
Sample Tag: SB-A5.2-ND132_74-79
Collected Date/Time: 08/19/2016 13:50
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
Extraction / Prep.								
pH check for VOCs*	<2	STD Units		N/A	08/22/16 13:30	JML		
Organics - Volatiles								
1,4-Dioxane*	90	ug/L	3	SW8260B - SIM	08/19/16 16:17	WAT	123-91-1	



Analytical Laboratory Report

Supplemental Report

Lab Sample ID: S75552.03
Sample Tag: Trip Blank
Collected Date/Time: 08/19/2016 00:01
Matrix: Water
COC Reference:

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.2	IR

Analysis	Results	Units	RL	Method	Run Date/Time	Tech	CAS #	Flags
----------	---------	-------	----	--------	---------------	------	-------	-------

Extraction / Prep.

pH check for VOCs*	<2	STD Units		N/A	08/22/16 13:30	JML		
--------------------	----	-----------	--	-----	----------------	-----	--	--

Organics - Volatiles

1,4-Dioxane*	Not detected	ug/L	3	SW8260B - SIM	08/25/16 15:35	JGH	123-91-1	
--------------	--------------	------	---	---------------	----------------	-----	----------	--

Arcadis of Michigan, LLC

28550 Cabot Drive

Suite 500

Novi, Michigan 48377

Tel 248 994 2240

Fax 248 994 2241

www.arcadis.com

