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Date: February 9, 2021
Our Ref: 30075941

Subject: Plant 2, 3 and Plant 6 Vapor Intrusion Investigation Summary
RACER Trust Industrial Land, Plants 2, 3 & 6, Lansing, Michigan

Dear Ms. Matlock,

Arcadis of Michigan, LLC (Arcadis) on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust has completed a vapor intrusion (VI) investigation for RACER Lansing Plants 2, 3 & 6 located in Lansing, Michigan (Site). The Plant 2 and initial Plant 6 VI activities were completed in accordance with the *Vapor Intrusion Evaluation and Work Plan - Revised* (Arcadis, 2019) approved by the Michigan Department of Environment, Great Lakes and Energy (EGLE) in September 2019. Additional investigation activities at Plant 3 and near the Plant 6 entrance were completed consistent with the *Vapor Intrusion Follow Up Workplan* (Arcadis 2020a) submitted via email to EGLE on May 6, 2020, as well as the scope of work included as part of the *Plant 6 Vapor Intrusion Investigation - Revised* summary report (Arcadis, 2020b) approved by the EGLE on November 5, 2020.

This summary report includes the following attachments:

- Attachment 1 – SSMP/SVMP Field Sampling Logs/Notes
- Attachment 2 – Laboratory Data Reports
- Attachment 3 – Boring Logs

Plant 2

Soil and groundwater samples in the vicinity of the unoccupied building located in the southwestern corner of Plant 2 were evaluated against Site Specific Vapor Intrusion to Indoor Air Criteria (SSVIAC) determined for the Site (EGLE 2019). The SSVIAC used applies to a nonresidential structure greater than 50,000 square feet with a slab on grade construction, the depth to groundwater of 10 to 15 feet below ground surface (ft bgs) and the USDA soil type of sand. Soil samples near the Plant 2 building are associated with a former underground storage tank area previously used for fueling. The SSVIAC exceedances for soil and groundwater are summarized on **Figure 1**. The following samples located near the Plant 2 building were identified above SSVIAC:

- Soil –one of the 2012 boring locations (SB-A1-RQ78) contained concentrations in soil of isopropyl benzene (410 micrograms per kilogram [$\mu\text{g}/\text{kg}$]) and naphthalene (3,000 $\mu\text{g}/\text{kg}$) at a depth of 12-13 ft bgs above the SSVIAC of 160 $\mu\text{g}/\text{kg}$ and 2,800 $\mu\text{g}/\text{kg}$, respectively.
- Groundwater –one of the 2012 boring locations (SB-A1-RS78) contained concentrations of phenanthrene (20 micrograms per liter [$\mu\text{g}/\text{L}$]) above SSVIAC of 0.97 $\mu\text{g}/\text{L}$ from 10.5-11.5 ft bgs.

Plant 2 Unoccupied Building Installation of Sub-Slab Monitoring Points

As outlined in the *Vapor Intrusion Evaluation and Work Plan*, dated October 1, 2019 (Arcadis, 2019), Arcadis completed the installation of four (4) Vapor Pin[®] sub-slab monitoring points (SSMPs) within the unoccupied building in the southwest corner of Plant 2 on February 17, 2020 (**Figure 2**). SSMPs were installed by Fibertec Environmental Services, Inc. (Fibertec) with field oversight provided by Arcadis.

Sub-slab soil gas samples were collected during four (4) quarters on February 18, 2020, June 17, 2020, September 3, 2020, and December 9, 2020. A helium leak test was conducted prior to sampling at each SSMP location. Samples were collected in Bottle Vacs and submitted to Fibertec for analysis of volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method TO-15. Additional samples were collected in sorbent tubes and analyzed for phenanthrene by National Institute for Occupational Safety and Health (NIOSH) 5515 (Modified)/EPA TO-13A.

Results

The soil gas sampling results were compared to the SSVIAC and EGLE May 2020 Draft Non-Residential Vapor Intrusion Criteria. A summary of the soil gas results is provided as **Table 1A**. The following constituents were detected in one or more of the SSMPs above laboratory detection limits but below SSVIAC and/or EGLE May 2020 Draft Non-Residential Vapor Intrusion Criteria:

- Chloroform
- Dichlorodifluoromethane (Freon 12)
- Trichloroethene
- Tetrachloroethene
- Acetone
- Trans-1,2-dichloroethene.

Based on the results of the sampling, vapor intrusion is not an exposure pathway that warrants further action within the unoccupied building at Plant 2. No additional soil gas characterization in this area is proposed at this time.

Plant 3

Area 16 is in the southeastern corner of Plant 3 and consists of an area of shallow fill material (construction debris, glass, coal, etc.) adjacent to a railroad easement (**Figure 2**). Mercury was detected within soil samples collected from the 2013 boring location SB-A16-HU181 at a concentration of 1,067 $\mu\text{g}/\text{kg}$ at 0 to 1 foot below ground surface (bgs) and 897 $\mu\text{g}/\text{kg}$ at 4 to 5 ft bgs. The *Vapor Intrusion Evaluation and Work Plan* (Arcadis, 2019) suggested this location was not a vapor intrusion concern since it is adjacent to a railroad and park area

and no structures for human occupancy exist within more than 1,200 feet. However, during an April 9, 2020 meeting EGLE suggested this location be resampled to verify mercury concentrations.

On January 22, 2021 one soil boring (SB-A16-HU181R) was advanced using a hand auger to a depth of 5 feet bgs at former soil boring location SB-A16-HU181. Soil samples were collected from 1-2 ft bgs and 4-5 ft bgs and submitted to Merit Laboratories, Inc. (Merit) in Lansing, Michigan for laboratory analysis of mercury using USEPA Method 7471.

Results

Mercury results for SB-A16-HU181R show concentrations of 294 µg/kg and 2,354 µg/kg at depths 1-2 and 4-5 ft bgs, respectively (**Table 2**). During resampling, fill material consisting of coal, glass and concrete was encountered at this location consistent with the previous fill description. The heterogeneous nature of the fill in Area 16 accounts for the varying mercury concentrations observed between the original samples collected at SB-A16-HU181 and samples collected from SB-A16-HU181R.

Both soil sample intervals were above the background mercury level of 130 µg/kg; however, as previously noted, no structures for human occupancy exist within more than 1,200 feet of this location and the risk of vapor intrusion associated with the shallow mercury in soil is minimal. Potential vapor intrusion from the area of fill material at Area 16 is addressed by a provision included in the existing Declaration of Restrictive Covenant (DRC) (and a provision will be included in any amended DRCs) that requires vapor intrusion to be addressed. No additional VI investigation activities are proposed at this location.

Plant 6

Based on review of the data provided in the *Vapor Intrusion Evaluation and Work Plan* (Arcadis, 2019) and follow-up Plant 6 VI work plans, there were three areas of potential concern at Plant 6 regarding an off-site VI potential pathway:

- Mercury in soil at the eastern Plant 6 property boundary (**Figure 3**). Mercury detected at a concentration of 145.8 µg/kg in shallow soil at soil boring SB-A5.8-NM321 in 2012.
- Phenanthrene historically detected in monitoring wells near the southern Plant 6 boundary (**Figure 4**). Historical analytical results at MW-13-36R and MW-13-35 detected phenanthrene above 1 µg/L.
- Vinyl chloride near the Plant 6 entrance at Stanley Street and Osborn Street (**Figure 5**). Historical vertical aquifer profile (VAP) sample at the 2012 boring VAP-A5.7-MB257 detected vinyl chloride in perched groundwater at a concentration of 13 µg/L at 7-8 ft bgs.

Mercury at the Eastern Plant 6 Boundary

On February 17, 2020 two soil borings SB-A5.8-NM321_02172020 and SB-A5.8-NM324 were advanced to 10 ft bgs adjacent to and to the west (respectively) of the former location of SB-A5.8-NM321. At each location, two soil samples were collected at depths of approximately 1-2 ft bgs and 5-6 ft bgs along with a duplicate sample. The soil samples collected were submitted to Fibertec Environmental Services, Inc. (Fibertec) in Holt, Michigan for analysis of mercury using USEPA Method 7471.

The mercury concentrations at both SB-A5.8-NM321_02172020 and SB-A5.8-NM324 were below laboratory detection limits of 50 µg/kg, which is below the Michigan Background Level for mercury is 130 µg/kg. Laboratory analytical results are summarized on **Table 2**. No further VI evaluation is proposed for this area.

Phenanthrene in Monitoring Wells in Southern Plant 6

Two rounds of groundwater samples were collected from monitoring wells MW-13-36R and MW-13-35 at the same time as semi-annual sampling events conducted on February 17, 2020 and August 31, 2020 and submitted to Merit for analysis of semi-volatile organic compounds (SVOCs) using USEPA Method 8270. Analytical results are summarized on **Table 3**. These additional samples, as outlined in the 2019 work plan, were collected to verify phenanthrene below laboratory detection limits. Based on the SSVIAC provided, the site-specific criterion is below target detection limits (TDL). In accordance with Section 20120a(10) when the TDL for a hazardous substance is greater than the developed cleanup criterion, the criterion is the TDL.

Phenanthrene was not detected in the groundwater samples collected at monitoring wells MW-13-36R and MW-13-35. Analytical results are summarized on **Table 3**. No further SVOC sampling is proposed at these monitoring well locations.

Vinyl Chloride Near Plant 6 Entrance at Osborn and Stanley Streets

During the 2012 remedial investigation activities vinyl chloride was detected at a concentration of 13 µg/L at a depth of 7-8 ft bgs at boring VAP-A5.7-MB257 located near the Plant 6 entrance at Osborn and Stanley. On February 17, 2020, soil boring VAP-A5.7-MB257_02172020 was completed adjacent to VAP-A5.7-MB257 using a direct push drilling rig. A temporary well set from 5-10 ft bgs and a groundwater sample was collected. The location of the boring is included on **Figure 5**. The groundwater sample was submitted to Merit in East Lansing, Michigan for VOC analysis using USEPA Method 8260. The result of the re-sample event indicated a vinyl chloride concentration of 3 µg/L. A summary of the groundwater analytical data is included on **Table 3**.

The re-sample result for vinyl chloride was above the EGLE Residential SSVIAC for groundwater of 0.96 µg/L. The 0.96 µg/L residential SSVIAC is for a structure with a basement, sandy soil, and groundwater (not in contact) at a depth greater than 10 ft bgs. The concentration was also above the Draft May 2020 Residential Groundwater Not in Contact Volatilization to Indoor Air Pathway (VIAP) Screening Level of 2.1 µg/L.

In general, the hydrogeologic conditions in this area are expected to limit the off-site risk of vapor intrusion (Arcadis 2020a). Vinyl chloride impacts exceeding SSVIAC in groundwater are encountered between ground surface and 15 ft bgs, consistent with the perched zone at the Site. The geology of the area is dominated by clay with discontinuous layers of sand, silt and some fill material that can be saturated in the upper 15 feet. SSVIAC exceedances in groundwater at soil boring location VAP-A5.7-MB257 were encountered in a sand seam from 7 to 8 feet bgs. The sand seam is present in soil boring SB-OS-MA266 located on the east side of Stanley Street at a depth of 8-9.5 feet bgs. A previous VAP boring, SB-A5.7-LX268, which is located between the residence to the northeast and the detection at SB-OS-MA266, encountered only clay with no groundwater present. The location of the off-site borings and vinyl chloride concentrations in groundwater are summarized on **Figure 5**.

Also, note that the presumed source of vinyl chloride was removed in 2016 during the Area 5-7 excavation of trichlorethylene (TCE) impacted soil (PM Environmental 2016). Based on the clay dominant geology, limited migration of groundwater to the northeast, mitigated source, and apparent decreasing concentrations (e.g., at location VAP-A5.7-MB257), risk of vapor migration through the subsurface appears limited.

Additional Delineation Activities (July 2020)

Additional investigation activities were completed to delineate potential off-site migration of vinyl chloride above the SSVIAC near the Plant 6 entrance. A general rule of thumb is that a source of chlorinated vapors is considered a viable VI source if it is located within 100 feet of a receptor (EGLE, 2013). The additional investigation activities were completed on July 20-24, 2020 in accordance with the May 6, 2020 *Vapor Intrusion Follow-Up Work Plan* (Arcadis, 2020a) and consisted of advancing five direct push vertical aquifer profile (VAP) borings in the right-of-way (ROW) along Stanley Street located to the east of Plant 6 and VAP-A5.7-MB257 (**Figure 5**).

Results of the additional delineation work completed in July 2020 were summarized in the *Plant 6 Vapor Intrusion Investigation – Revised* report (Arcadis, 2020b). VAP boring locations and groundwater analytical results are provided on **Figure 5** and summarized on **Table 3**. Vinyl chloride was not detected in SB-OS-LV263, SB-OS-MB263, or SB-OS-MC268, providing delineation to the north, southeast, and east respectively. SB-OS-MA266 is located approximately 100 feet from the nearest building (a garage associated with a residence including a basement) and contained a vinyl chloride at a concentration of 1 µg/L.

Follow Up VI Investigation (Nov/Dec 2020)

Based on the VAP groundwater results near the Plant 6 entrance, additional investigation activities included the installation of two (2) permanent monitoring wells and the installation of an off-site soil vapor monitoring point (SVMP). Monitoring wells MW-20-131 (5 to 10 ft bgs) near the original boring VAP-A5.7-MB257 and MW-20-132 (6 to 11 ft bgs) along the Stanley ROW, were installed on November 23, 2020 (**Figure 5**).

The proposed activities outlined in the *Plant 6 Vapor Intrusion Investigation – Revised* report included the installation of up to three (3) nested SVMPs between the MW-20-132 location and the residences further to the northeast to verify vapor concentrations were below the SSVIAC. During installation, groundwater was encountered shallower than expected within a sand layer encountered at 7.5 to 10 feet bgs. Therefore, only one SVMP was installed (SVMP-20-01) screened from 4.5 to 5 feet bgs (**Figure 5**). In place of deeper SVMPs, a groundwater sample was collected from the sand layer with a temporary well screened installed at 5 to 10 feet bgs.

Soil Vapor

Soil vapor point SVMP-20-01 was sampled on December 9, 2020 for USEPA Method TO-15 analysis. A helium leak test was performed prior to sampling and the soil gas sample was collected in laboratory provided Bottle Vac and submitted to Fibertec for laboratory analysis. The results of the vapor sample show trichloroethene at a concentration of 9.5 micrograms per meters cubed (µg/m³), which is below the SSVIAC of 67 µg/m³. No other constituents were detected in the soil gas sample. SVMP analytical results are summarized on **Table 1B**.

SVMP-20-01 will be sampled quarterly for three additional quarters to complete four consecutive quarters of sampling. The results of the quarterly sampling will be provided to EGLE in an addendum to this report.

Ms. Christine Matlock
Michigan Department of Environment, Great Lakes, and Energy
February 9, 2021

Groundwater

Groundwater samples were collected from the two new monitoring wells (MW-20-131 and MW-20-132) at the same time as the quarterly event on December 3, 2020 and submitted to Merit for analysis of VOCs by USEPA Method 8260. The vinyl chloride result for MW-20-131 near the Plant 6 entrance was 3 µg/L, consistent with previous sampling in this area. The vinyl chloride result at MW-20-132 along the Stanley ROW was 1.0 µg/L, just above the residential SSVIAC of 0.96 µg/L. Cis-1,2-dichloroethene (cis-1,2-DCE) was the only other compound detected at these locations and concentrations were below its SSVIAC. Groundwater results are summarized on **Table 3**. Based on the detection of vinyl chloride in the monitoring wells above SSVIAC, these wells will be sampled on a quarterly basis during routine groundwater monitoring for a minimum of three additional quarters and analyzed for VOCs.

The results of the groundwater sample collected from the temporary well installed at the SVMP location indicated a concentration of vinyl chloride at 3 µg/L, above the SSVIAC. No other constituents other than cis-1,2-DCE were detected above laboratory detection limits. Although the groundwater result at SVMP-20-01 was above the SSVIAC for vinyl chloride, the soil gas just above the saturated sand was non-detect for vinyl chloride. Soil vapor samples will continue to be collected on a quarterly basis from SVMP-20-01 for a minimum of three additional quarters.

Conclusions

Based on the investigation activities summarized above and current and planned DRCs, the VI pathway has been addressed on Plants 2 or 3. On Plant 6 no potential VI concerns remain with regards to mercury within the soil in the vicinity of SB-A5.8-NM321 and phenanthrene within groundwater in the vicinity of monitoring wells MW-13-36R and MW-13-35.

Based on the detections of vinyl chloride in monitoring wells MW-20-131 and MW-20-132 above SSVIAC, these wells will continue to be sampled on a quarterly basis during routine groundwater monitoring for a minimum of three additional quarters and analyzed for VOCs, and as noted, soil vapor samples will continue to be collected on a quarterly basis from SVMP-20-01 for a minimum of three additional quarters to allow for further assessment of concentrations and the VI pathway.

Sincerely,
Arcadis of Michigan, LLC



Patrick Curry, PG, CPG
Technical Expert

CC. Mr. Dave Favero – RACER

Ms. Christine Matlock
Michigan Department of Environment, Great Lakes, and Energy
February 9, 2021

References:

- EGLE. 2018. Transmittal of Site-Specific Volatilization to Indoor Air Criteria, RACER Trust, Lansing Plants 2 & 3, Lansing, Michigan. August 15.
- Arcadis. 2019. 2019 Vapor Intrusion Evaluation and Work Plan-Revised. RACER Trust, Lansing, Michigan, Plants 2, 3, and 6. October 3.
- Arcadis. 2020a. Email transmittal: To: Joe Rogers, et.al. From: Patrick Curry. RE: RACER Lansing – Vapor Intrusion Follow-up Work Plan. May 6.
- Arcadis. 2020b. Plant 6 Vapor Intrusion Investigation – Revised. RACER Trust, Plant 6, Lansing, Michigan. October 29.

Enclosures:

Tables

- Table 1A – Summary of Sub-Slab Analytical Results
- Table 1B – Summary of Soil Gas Analytical Results from SVMP
- Table 2 – Summary of Soil Sample Analytical Results – Mercury
- Table 3 – Summary of Groundwater Sample Analytical Results – VI Evaluation

Figures

- Figure 1 – SSVIAC Exceedances near Building at Plant 2
- Figure 2 – Plant 2 Building SSMP Sampling Locations
- Figure 3 – Mercury in Soil Re-Evaluation
- Figure 4 – Re-Sample of Groundwater at Select Locations for VI Evaluation
- Figure 5 – Summary of Groundwater and SVMP Analytical Results Near Plant 6 Entrance

Attachments

- Attachment 1 – SSMP/SVMP Field Sampling Logs/Notes
- Attachment 2 – Laboratory Data Reports
- Attachment 3 – Boring Logs

Tables

Location ID	Nonresidential SSVIAC (µg/m³)	EGLE DRAFT 2020 Nonresidential VI Criteria (µg/m³)	SSMP-20-1	SSMP-20-1	SSMP-20-1	SSMP-20-1	SSMP-20-2	SSMP-20-2	SSMP-20-2	SSMP-20-2	SSMP-20-3	SSMP-20-3	SSMP-20-3	SSMP-20-3	SSMP-20-4	SSMP-20-4	SSMP-20-4	SSMP-20-4
Date Collected			2/18/2020	6/17/2020	9/3/2020	12/9/2020	2/18/2020	6/17/2020	9/3/2020	12/9/2020	2/18/2020	6/17/2020	9/3/2020	12/9/2020	2/18/2020	6/17/2020	9/3/2020	12/9/2020
VOC via USEPA Method TO-15 (ug/m³)																		
Acetone	1,000,000 st	1,000,000	<57	<57	<57	<57	65	<770	<57	<57	<57	<57	<57	<57	67	<110	<57	<57
Benzene	260 ca	260	<19	<19	<19	<19	<19	<96	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19
Benzyl Chloride	--	40	<6.2	<6.2	<6.2	<6.2	<6.2	<33 V+	<6.2	<6.2	<6.2	<6.2	<6.2 V+	<6.2	<6.2	<6.2	<6.2 V+	<6.2
Bromodichloromethane	--	100	<8.0	<8.0	<8.0	<8.0	<8.0	<19	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Bromoform	--	1,800	<62	<62	<62	<62	<62	<69	<62	<62	<62	<62	<62	<62	<62	<62	<62	<62
Bromomethane	--	510	<23	<23	<23	<23	<23	<43	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23
1,3-Butadiene	--	--	<0.66	<0.66	<0.66	<0.66	<1.2	<16 V+	<0.66	<0.66	<0.66	<0.66	<1.2 V+	<0.66	<0.66	<1.2	<2.3 V+	<0.66
2-Butanone (MEK)	170,000 (SE) dev	170,000	<35	<35	<35	<35	<35	<240	<35	<35	<35	<35	<35	<35	<35	<35	<35	<35
Carbon Disulfide	36,000 nc	36,000	<37	<47	<37	<37	<37	<260	<37	<37	<37	<37	<37	<37	<37	<37	<37	<37
Carbon Tetrachloride	--	360	<7.5	<7.5	<7.5	<7.5	<7.5	<18	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5	<7.5
Chlorobenzene	--	2,600	<28	<28	<28	<28	<28	<32	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Chloroethane	--	200,000	<16	<16	<16	<16	<16	<73	<16	<16	<16	<16	<16	<16	<16	<16	<16	<16
Chloroform	87 ca	87	11	58	54	21	<5.9	<14	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9	<5.9
Chloromethane	--	4,600	<12	<12	<12	<12	<12	<110 V+	<12	<12	<12	<12	<12 V+	<12	<12	<12	<16 V+	<12
Cyclohexane	310,000 nc	310,000	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41
Dibromochloromethane	--	83	<4.1	<7.7	<4.1	<4.1	<4.1	<24	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1	<4.1
1,2-Dichlorobenzene	--	15,000	<36	<36	<36	<36	<36	<850	<36	<36	<36	<36	<36	<36	<36	<36	<120	<36
1,3-Dichlorobenzene	--	150	<36	<36	<36	<36	<36	<170	<36	<36	<36	<36	<36	<36	<36	<36	<36	<36
1,4-Dichlorobenzene	--	510	<36	<36	<36	<36	<36	<170	<36	<36	<36	<36	<36	<36	<36	<36	<36	<36
Dichlorodifluoromethane (Freon 12)	--	17,000	2,800	4,500	6,900	4,200	4,000	9,000	14,000	9,800	2,000	2,300	5,400	4,700	3,600	4,300	6,600	9,000
1,1-Dichloroethane	1,200 ca	1,200	<24	<24	<24	<24	<24	<30	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24
1,2-Dichloroethane	77 ca	77	<4.9	<4.9	<4.9	<4.9	<4.9	<12	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9
1,1-Dichloroethene	10,000 nc	10,000	<24	<24	<24	<24	<24	<30	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24
cis-1,2-Dichloroethene	410 nc	410	<24	<24	<24	<24	<24	<29	<24	<24	<24	<24	<24	<24	<24	<24	<24	<24
trans-1,2-Dichloroethene	4,100 nc	4,100	<24	<24	<24	<24	<24	<29	<24	<24	<24	<24	<24	<24	28	<24	<24	<24
1,2-Dichloropropane	--	200	<28	<28	<28	<28	<28	<34	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
cis-1,3-Dichloropropene	--	--	<27	<27	<27	<27	<27	<34	<27	<27	<27	<27	<27	<27	<27	<27	<27	<27
trans-1,3-Dichloropropene	--	--	<27	<27	<27	<27	<27	<47	<27	<27	<27	<27	<27	<27	<27	<27	<27	<27
1,4-Dioxane	400 ca	400	<22	<22	<22	<22	<22	<99	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22
Ethyl Acetate	--	3,600	<43	<43	<43	<43	<43	<90	<43	<43	<43	<43	<43	<43	<43	<43	<43	<43
Ethylbenzene	800 ca	800	<52	<52	<52	<52	<52	<130	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52
Ethylene Dibromide	3.3 ca	3.3	<0.92	<3.2	<0.92	<0.92	<1.7	<23	<0.92	<0.92	<0.92	<0.92	<1.7	<0.92	<0.92	<1.7	<3.3	<0.92
n-Heptane	--	180,000	<49	<49	<49	<49	<49	<120	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49
Hexachlorobutadiene	--	91	<5.1	<10	<5.1	<5.1	<5.4	<72	<5.1	<5.1	<5.1	<5.1	<5.4	<5.1	<5.1	<5.4	<10	<5.1
n-Hexane	36,000 nc	36,000	<42	<42	<42	<42	<42	<110	<42	<42	<42	<42	<42	<42	<42	<42	<42	<42
2-Hexanone	--	1,500	<49	<49	<49	<49	<49	<270	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49
2-Propanol (Isopropanol alcohol)	--	--	<29	<29	<29	<29	<29	<200	<29	<29	<29	<29	<29	<29	<29	<29	<29	<29
4-Methyl-2-pentanone	--	27,000	<49	<49	<49	<49	<49	<300	<49	<49	<49	<49	<49	<49	<49	<49	<49	<49
Methylene Chloride	--	31,000	<42	<52	<42	<42	<42	<190	<42	<42	<42	<42	<42	<42	<42	<42	<42	<42
2-methylnaphthalene	510 nc	510	<140	<140	<140	<140	<160	<2200	<140	<140	<140	<140	<160	<140	<140	<160	<310	<140
Methyl tert-butyl ether (MTBE)	7,700 ca	7,700	<22	<22	<22	<22	<22	<110	<22	<22	<22	<22	<22	<22	<22	<22	<22	<22
Naphthalene	59 ca	59	<28	<28	<28	<28	<28	<140	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Styrene	--	3,500	<51	<51	<51	<51	<51	<310	<51	<51	<51	<51	<51	<51	<51	<51	<51	<51
1,1,2,2-Tetrachloroethane	--	34	<3.3	<3.3	<3.3	<3.3	<3.3	<21	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
Tetrachloroethene	1,400 (SE) st	1,400	<41	70	79	<41	<41	<50	<41	<41	<41	<41	<41	<41	<41	<41	<41	<41
Tetrahydrofuran	--	100,000	<3.5	<3.5	<3.5	<3.5	<3.5	<34	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<3.5	<4.9	<3.5
Toluene	250,000 (SE) st	250,000	<23	<23	<23	<23	<23	<81	<23	<23	<23	<23	<23	<23	<23	<23	<23	<23
1,2,4-Trichlorobenzene	--	100	<89	<89	<89	<89	<140	<1900	<89	<89	<89	<89	<140	<89	<89	<140	<270	<89
1,1,1-Trichloroethane	--	230,000	<33	<33	<33	<33	<33	<33	<33	<33	<33	<33	<33	<33	<33	<33	<33	<33
1,1,2-Trichloroethane	--	10	<6.5	<6.5	<6.5	<6.5	<6.5	<40	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5	<6.5
Trichloroethene	67 (SE) dev	67	<1.6	<2.2	<1.6	37	<1.6	<16	<1.6	<1.6	43	2.3	<1.6	<1.6	7.4	<1.6	<2.2	<1.6
Trichlorofluoromethane (Freon 11)	--	22,000	<34	<34	<34	<34	<34	<42	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34

Location ID	Nonresidential SSVIAC (µg/m3)	EGLE DRAFT 2020 Nonresidential VI Criteria (µg/m3)	SSMP-20-1	SSMP-20-1	SSMP-20-1	SSMP-20-1	SSMP-20-2	SSMP-20-2	SSMP-20-2	SSMP-20-2	SSMP-20-3	SSMP-20-3	SSMP-20-3	SSMP-20-3	SSMP-20-4	SSMP-20-4	SSMP-20-4	SSMP-20-4
Date Collected			2/18/2020	6/17/2020	9/3/2020	12/9/2020	2/18/2020	6/17/2020	9/3/2020	12/9/2020	2/18/2020	6/17/2020	9/3/2020	12/9/2020	2/18/2020	6/17/2020	9/3/2020	12/9/2020
1,1,2-Trichloro-trifluoroethane (Freon 113)	--	970,000	<46	<46	<46	<46	<46	<91	<46	<46	<46	<46	<46	<46	<46	<46	<46	<46
1,2,4-Trimethylbenzene	3,100 <i>nc</i>	3,100	<29	<29	<29	<29	<29	<140	<29	<29	<29	<29	<29	<29	<29	<29	<29	<29
1,3,5-Trimethylbenzene	3,100 <i>nc</i>	3,100	<29	<29	<29	<29	<29	<140	<29	<29	<29	<29	<29	<29	<29	<29	<29	<29
Vinyl Acetate	--	10,000	<42	<42	<42	<42	<42	<500	<42	<42	<42	<42	<42	<42	<42	<42	<71	<42
Vinyl Chloride	450 <i>ca</i>	450	<15	<15	<15	<15	<15	<29 V+	<15	<15	<15	<15 V+	<15	<15	<15	<15 V+	<15	<15
m,p Xylenes	--	--	<52	<52	<52	<52	<52	<250	<52	<52	<52	<52	<52	<52	<52	<52	<52	<52
o- Xylenes	--	--	<52	<52	<52	<52	<95	<1300	<52	<52	<52	<52	<95	<52	<52	<95	<180	<52
Total Xylenes	11,000 <i>nc</i>	11,000	<100	<100	<100	<100	<110	<1500	<100	<100	<100	<110	<100	<100	<110	<220	<100	<100
PAHs via USEPA Method TO-13 (ug/m³)																		
Acenaphthene	11,000 <i>nc</i>	11,000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acenaphthylene	11,000 <i>nc</i>	11,000	<5	<5 L-	<5	<5	<5	<5 L-	<5	<5	<5	<5 L-	<5	<5	<5	<5 L-	<5	<5
Anthracene	51,000 <i>nc</i>	51,000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Benzo(a)anthracene	33 <i>ca</i>	33	<1	<1	<1 F-	<2	<1	<1	<1 F-	<2	<1	<1	<1 F-	<2	<1	<1	<1 F-	<1 F-
Fluorene	7,200 <i>nc</i>	7,200	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-methylnaphthalene	510 <i>nc</i>	510	<5	<5	<5	<5 L-	<5	<5	<5	<5 L-	<5	<5	<5	<5 L-	<5	<5	<5	<5 L-
Naphthalene	59 <i>ca</i>	59	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Phenanthrene	5.1 <i>nc</i>	5.1	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Pyrene	5,100 <i>nc</i>	5,100	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

NOTES:

Units: micrograms per cubic meter (µg/m³)

-- = No criteria requested for SSVIAC

SSMP = Sub-slab monitoring point

SSVIAC = Site-specific volatilization to indoor air criteria (provided by EGLE)

V+ - Recovery in the associated continuing calibration verification sample (CCV) exceeds the upper control limit. Results may be biased high.

L- - Recovery in the associated laboratory sample (LCS) exceeds the lower control limit. Results may be biased low.

F- - Recovery from the spiked aliquot exceeds the lower control limit (matrix spike or matrix spike duplicate).

NR - Not Reported by laboratory in report provided

< = Not Detected above laboratory detection limit

All results compared to Michigan Department of Environment, Great Lakes and Energy (EGLE) site-specific volatilization to indoor air criteria (VIAC), August 15,

Bolded values were detected above laboratory detection limits

EGLE Footnotes:

(SE): Site-specific criteria based on single event exposure; therefore, sampling methods should reflect shorter exposure scenarios.

ca: the criterion is based on carcinogenic health effects

dev: the criterion is based on developmental health effects

nc: the criterion is based on non-carcinogenic health effects

st: the criterion is based on short-term toxicity

Table 1B
Summary of Soil Gas Analytical Results from SVMP
RACER Lansing
Lansing, Michigan

Location ID	Residential SSVIAC (µg/m ³)	EGLE DRAFT 2020 Nonresidential VI Criteria (µg/m ³)	SVMP-20-01
Date Collected			12/9/2020
VOC via USEPA Method TO-15 (ug/m³)			
Acetone	1,000,000 <i>st</i>	1,000,000	<57 [<i><57</i>]
Benzene	110 <i>ca</i>	110 <i>ca</i>	<19 [<i><19</i>]
Benzyl Chloride	--	17 <i>ca</i>	<6.2 [<i><6.2</i>]
Bromodichloromethane	--	48 <i>ca</i>	<8.0 [<i><8.0</i>]
Bromoform	--	770 <i>ca</i>	<62 [<i><62</i>]
Bromomethane	--	350 <i>nc</i>	<23 [<i><23</i>]
1,3-Butadiene	--	--	<0.66 [<i><0.66</i>]
2-Butanone (MEK)	170,000 (<i>SE</i>) <i>dev</i>	170,000	<35 [<i><35</i>]
Carbon Disulfide	24,000 <i>nc</i>	24,000 <i>nc</i>	<37 [<i><37</i>]
Carbon Tetrachloride	--	150 <i>ca</i>	<7.5 [<i><7.5</i>]
Chlorobenzene	--	1,700 <i>nc</i>	<28 [<i><28</i>]
Chloroethane	--	140,000 <i>nc</i>	<16 [<i><16</i>]
Chloroform	37 <i>ca</i>	37 <i>ca</i>	<5.9 [<i><5.9</i>]
Chloromethane	--	3,100 <i>nc</i>	<12 [<i><12</i>]
Cyclohexane	210,000 <i>nc</i>	210,000 <i>nc</i>	<41 [<i><41</i>]
Dibromochloromethane	--	14 <i>mut</i>	<4.1 [<i><4.1</i>]
1,2-Dichlorobenzene	--	10,000 <i>nc</i>	<36 [<i><36</i>]
1,3-Dichlorobenzene	--	100 <i>nc</i>	<36 [<i><36</i>]
1,4-Dichlorobenzene	--	220 <i>ca</i>	<36 [<i><36</i>]
Dichlorodifluoromethane (Freon 12)	--	11,000 <i>nc</i>	<30 [<i><30</i>]
1,1-Dichloroethane	530 <i>ca</i>	530 <i>ca</i>	<24 [<i><24</i>]
1,2-Dichloroethane	33 <i>ca</i>	33 <i>ca</i>	<4.9 [<i><4.9</i>]
1,1-Dichloroethene	7,000 <i>nc</i>	7,000 <i>nc</i>	<24 [<i><24</i>]
cis-1,2-Dichloroethene	280 <i>nc</i>	280 <i>nc</i>	<24 [<i><24</i>]
trans-1,2-Dichloroethene	2,800 <i>nc</i>	2,800 <i>nc</i>	<24 [<i><24</i>]
1,2-Dichloropropane	--	140 <i>nc</i>	<28 [<i><28</i>]
cis-1,3-Dichloropropene	--	--	<27 [<i><27</i>]
trans-1,3-Dichloropropene	--	--	<27 [<i><27</i>]
1,4-Dioxane	170 <i>ca</i>	170 <i>ca</i>	<22 [<i><22</i>]
Ethyl Acetate	--	2,400 <i>nc</i>	<43 [<i><43</i>]
Ethylbenzene	340 <i>ca</i>	340 <i>ca</i>	<52 [<i><52</i>]
Ethylene Dibromide	1.4 <i>ca</i>	1.4 <i>ca</i>	<0.92 [<i><1.92</i>]
n-Heptane	--	120,000 <i>nc</i>	<49 [<i><49</i>]
Hexachlorobutadiene	--	39 <i>ca</i>	<5.1 [<i><5.1</i>]
n-Hexane	24,000 <i>nc</i>	24,000 <i>nc</i>	<42 [<i><42</i>]
2-Hexanone	--	1,000 <i>nc</i>	<49 [<i><49</i>]
2-Propanol (Isopropanol alcohol)	--	--	<29 [<i><29</i>]
4-Methyl-2-pentanone	--	27,000 <i>st</i>	<49 [<i><49</i>]
Methylene Chloride	--	21,000 <i>nc</i>	<42 [<i><42</i>]
2-methylnaphthalene	350 <i>nc</i>	350 <i>nc</i>	<140 [<i><140</i>]
Methyl tert-butyl ether (MTBE)	3,300 <i>ca</i>	3,300 <i>ca</i>	<22 [<i><22</i>]
Naphthalene	25 <i>ca</i>	25 <i>ca</i>	<28 [<i><28</i>]
Styrene	--	1,500 <i>ca</i>	<51 [<i><51</i>]
1,1,1,2-Tetrachloroethane	--	15 <i>ca</i>	<3.3 [<i><3.3</i>]
Tetrachloroethene	1,400 (<i>SE</i>) <i>st</i>	1,400 <i>st</i>	<41 [<i><41</i>]
Tetrahydrofuran	--	70,000 <i>nc</i>	<3.5 [<i><3.5</i>]
Toluene	170,000 (<i>SE</i>) <i>st</i>	170,000 <i>nc</i>	<23 [<i><23</i>]

Table 1 - Summary of Soil Gas Analytical Results_SSMP-SVMP

Table 1B
Summary of Soil Gas Analytical Results from SVMP
RACER Lansing
Lansing, Michigan

Location ID	Residential SSVIAC (µg/m ³)	EGLE DRAFT 2020 Nonresidential VI Criteria (µg/m ³)	SVMP-20-01
Date Collected			12/9/2020
1,2,4-Trichlorobenzene	--	70 <i>nc</i>	<89 [<89]
1,1,1-Trichloroethane	--	170,000 <i>st</i>	<33 [<33]
1,1,2-Trichloroethane	--	7.0 <i>nc</i>	<6.5 [<6.5]
Trichloroethene	67 (SE) dev	67 <i>dev</i>	9.5 [<1.6]
Trichlorofluoromethane (Freon 11)	--	15,000 <i>nc</i>	<34 [<34]
1,1,2-Trichloro-trifluoroethane (Freon 113)	--	660,000 <i>nc</i>	<46 [<46]
1,2,4-Trimethylbenzene	2,100 <i>nc</i>	2,100 <i>nc</i>	<29 [<29]
1,3,5-Trimethylbenzene	2,100 <i>nc</i>	2,100 <i>nc</i>	<29 [<29]
Vinyl Acetate	--	7,000 <i>nc</i>	<42 [<42]
Vinyl Chloride	54 <i>ca</i>	54 <i>mut</i>	<15 [<15]
m,p Xylenes	--	--	<52 [<52]
o- Xylenes	--	--	<52 [<52]
Total Xylenes	7,600 <i>nc</i>	7,600 <i>nc</i>	<100 [<100]

NOTES:

Units: micrograms per cubic meter (µg/m³)

-- = No criteria requested for SSVIAC

SVMP = Soil vapor monitoring point

SSVIAC = Site-specific volatilization to indoor air criteria (provided by EGLE)

[] - duplicate sample

Residential SSVIAC - Applies to a residential house with a basement, the depth of groundwater at the Site and soil type of sand.

< = Not Detected above laboratory detection limit

All results compared to Michigan Department of Environment, Great Lakes and Energy (EGLE) site-specific volatilization to indoor

Bolded values were detected above laboratory detection limits

EGLE Footnotes:

(SE): Site-specific criteria based on single event exposure; therefore, sampling methods should reflect shorter exposure scenarios.

ca: the criterion is based on carcinogenic health effects

dev: the criterion is based on developmental health effects

nc: the criterion is based on non-carcinogenic health effects

mut: the criterion is based on mutagenic cancer health effects

st: the criterion is based on short-term toxicity

Table 2
Summary of Soil Sample Analytical Results - Mercury
RACER Trust
Lansing, Michigan

Location ID	Sample Depth (ft)	Date Collected	Units	Mercury (CAS#7439-97-6T)
EGLE Residential SSVIAC Soil				22
Michigan Statewide Background Level				130
SB-A5.8-NM321	1 - 2	09/21/12	ug/kg	36.2
SB-A5.8-NM321	5 - 6	09/21/12	ug/kg	145.8
SB-A5.8-NM321	1 - 2	02/17/20	ug/kg	<50 V+ [<50]
SB-A5.8-NM321	5 - 6	02/17/20	ug/kg	<50 V+
SB-A5.8-NM324	1 - 2	02/17/20	ug/kg	<50 V+
SB-A5.8-NM324	5 - 6	02/17/20	ug/kg	<50 V+
SB-A16-HU181	0 - 1	07/10/13	ug/kg	1,067
SB-A16-HU181	4 - 5	07/10/13	ug/kg	897
SB-A16-HU181R	0 - 1	01/22/21	ug/kg	294
SB-A16-HU181R	4 - 5	01/22/21	ug/kg	2,354

Notes:

CAS - Chemical Abstract Service Number

EGLE - Michigan Department of Environment, Great Lakes and Energy

SSVIAC - Site Specific Volatilization to Indoor Air Criteria

ug/kg - micrograms per kilogram

V+ - Recovery in the associated continuing calibration verification sample (CCV) exceeds the upper control limit.

Results may be biased high.

*Values that are bolded and highlighted exceed the SSVIAC and the background level for Mercury.

Bolded Values exceed the SSVIAC for Mercury.

[] - duplicate sample

Table 3
Summary of Groundwater Sample Analytical Results - VI Evaluation
RACER Trust
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	CAS Number	EGLE Residential SSVIAC Groundwater	Res GW Not in Contact EGLE 2020 DRAFT VI Criteria	Units	VAP-A5.7-MB257 7 - 8 05/24/12 VAP-A5.7-MB257_7-8_052412	VAP-A5.7-MB257 7 - 8 05/24/12 VAP-A5.7-MB257-GW_7-8_ST_052412	VAP-A5.7-MB257 12 - 13 05/24/12 VAP-A5.7-MB257_12-13_052412	VAP-A5.7-MB257 12 - 13 05/24/12 VAP-A5.7-MB257-GW_12-13_ST_052412
Volatile Organics								
1,2,3-Trimethylbenzene	526-73-8	800	1200	ug/L	NA	NA	NA	NA
N-Propylbenzene	103-65-1	4,100	6,100	ug/L	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	106-93-4	2.9	3.8	ug/L	NA	<2	NA	<2
1,4-Dioxane	123-91-1	14,000	56,000	ug/L	<5	NA	<5	NA
1,1,1-Trichloroethane	71-55-6	8,700	14,000	ug/L	NA	<2	NA	<2
Acetone	67-64-1	12,000,000	40,000,000	ug/L	NA	<50	NA	<50
1,1,2-Trichloroethane	79-00-5	8.1	14	ug/L	NA	<2	NA	<2
1,1-Dichloroethane	75-34-3	67	130	ug/L	NA	<2	NA	<2
1,1-Dichloroethene	75-35-4	170	330	ug/L	NA	<2	NA	<2
1,2-Dichloroethane	107-06-2	21	41	ug/L	NA	<2	NA	<2
Carbon disulfide	75-15-0	970	2100	ug/L	NA	<2	NA	<2
cis-1,2-Dichloroethene	156-59-2	48	95	ug/L	NA	9	NA	0.61 J
trans-1,2-Dichloroethene	156-60-5	200	390	ug/L	NA	0.70 J	NA	<2
Chloroform (Trichloromethane)	67-66-3	7.6	14	ug/L	NA	<2	NA	<2
Trichloroethene	79-01-6	6.2	10	ug/L	NA	0.89 J	NA	<2
Tetrachloroethene	127-18-4	97	130	ug/L	NA	<2	NA	<2
Vinyl chloride	75-01-4	0.96	2.1	ug/L	NA	13 J	NA	<2
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	NA	NA	NA	NA
Benzene	71-43-2	14	28	ug/L	NA	<2	NA	<2
Ethylbenzene	100-41-4	45	74	ug/L	NA	<2	NA	<2
Toluene	108-88-3	23,000	41,000	ug/L	NA	<2	NA	<2
Xylene (total)	1330-20-7	1,200	2,000	ug/L	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	1634-04-4	4,000	7,400	ug/L	NA	<2	NA	<2
Naphthalene	91-20-3	73	130	ug/L	NA	<2	NA	<2
2-Butanone (Methyl ethyl ketone) (MEK)	78-93-3	1,500,000	4,300,000	ug/L	NA	<20	NA	<20
1,2,4-Trimethylbenzene	95-63-6	440	670	ug/L	NA	<2	NA	<2
1,3,5-Trimethylbenzene	108-67-8	310	470	ug/L	NA	<2	NA	<2
Cyclohexane	110-82-7	1,100	2,000	ug/L	NA	<2	NA	<2
Isopropyl benzene	98-82-8	10	15	ug/L	NA	<2	NA	<2
o-Xylene	95-47-6	1,200	2,000	ug/L	NA	<2	NA	<2
m&p-Xylene	M/P-XYLENE	1,200	2,000	ug/L	NA	<4	NA	<4
Semivolatile Organics								
1,4-Dioxane	123-91-1	14,000	56,000	ug/L	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	NA	NA	NA	NA
Naphthalene	91-20-3	73	130	ug/L	NA	NA	NA	NA
Anthracene	120-12-7	43	43	ug/L	NA	NA	NA	NA
Acenaphthene	83-32-9	3,900	3,900	ug/L	NA	NA	NA	NA
Acenaphthylene	208-96-8	65	65	ug/L	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	9.4	9.4	ug/L	NA	NA	NA	NA
Fluorene	86-73-7	1,700	1,700	ug/L	NA	NA	NA	NA
Phenanthrene	85-01-8	0.077	290	ug/L	NA	NA	NA	NA
Pyrene	129-00-0	140	140	ug/L	NA	NA	NA	NA
All other Semivolatile Organics	NA	NA	NA	ug/L	NA	NA	NA	NA

Table 3
Summary of Groundwater Sample Analytical Results - VI Evaluation
RACER Trust
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	CAS Number	EGLE Residential SSVIAC Groundwater	Res GW Not in Contact EGLE 2020 DRAFT VI Criteria	Units	VAP-A5.7-MB257 7 - 8 05/24/12 VAP-A5.7-MB257_7-8_052412	VAP-A5.7-MB257 7 - 8 05/24/12 VAP-A5.7-MB257-GW_7-8_ST_052412	VAP-A5.7-MB257 12 - 13 05/24/12 VAP-A5.7-MB257_12-13_052412	VAP-A5.7-MB257 12 - 13 05/24/12 VAP-A5.7-MB257-GW_12-13_ST_052412
Semivolatile Organics-Filtered								
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	<1	NA	<1	NA
Naphthalene	91-20-3	73	130	ug/L	<1	NA	<1	NA
Anthracene	120-12-7	43	43	ug/L	<1	NA	<1	NA
Acenaphthene	83-32-9	3,900	3,900	ug/L	<1	NA	<1	NA
Acenaphthylene	208-96-8	65	65	ug/L	<1	NA	<1	NA
Benzo(a)anthracene	56-55-3	9.4	9.4	ug/L	<1	NA	<1	NA
Fluorene	86-73-7	1,700	1,700	ug/L	<1	NA	<1	NA
Phenanthrene	85-01-8	0.077	290	ug/L	<1	NA	<1	NA
Pyrene	129-00-0	140	140	ug/L	<1	NA	<1	NA

Notes:
CAS - Chemical Abstract Service Number
EGLE - Michigan Department of Environment, Great Lakes and Energy
SSVIAC - Site Specific Volatilization to Indoor Air Criteria
RES - Residential
ug/L - micrograms per Liter
NA - constituent not analyzed for
*Values that are bolded and highlighted exceed the SSVIAC
J - value is estimated

Table 3
Summary of Groundwater Sample Analytical Results - VI Evaluation
RACER Trust
Lansing, Michigan



Location ID: Sample Depth(ft): Date Collected: Sample Name:	CAS Number	EGLE Residential SSVIAC Groundwater	Res GW Not in Contact EGLE 2020 DRAFT VI Criteria	Units	VAP-A5.7-MB257_02172020 5 - 10 02/17/20 VAP-A5.7-MB257_02172020	MW-13-35 25 - 30 09/20/13 MW-13-35 (092013)	MW-13-35 25 - 30 11/05/13 MW-13-35 (11513)_110513	MW-13-35 25 - 30 05/11/18 MW-13-35_051118	MW-13-35 25 - 30 02/18/20 MW-13-35_02182020	MW-13-35 25 - 30 08/31/20 MW-13-35_083120	MW-13-36R 5.5 - 10.5 12/18/13 MW-13-36R (12-18-13)
Volatile Organics											
1,2,3-Trimethylbenzene	526-73-8	800	1200	ug/L	<1	NA	NA	NA	NA	NA	NA
N-Propylbenzene	103-65-1	4,100	6,100	ug/L	<1	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane (Ethylene dibromide)	106-93-4	2.9	3.8	ug/L	<1	<1	<1	<1	NA	NA	<1
1,4-Dioxane	123-91-1	14,000	56,000	ug/L	NA	<5	<5	NA	NA	NA	<5
1,1,1-Trichloroethane	71-55-6	8,700	14,000	ug/L	<1	<1	<1	<1	NA	NA	<1
Acetone	67-64-1	12,000,000	40,000,000	ug/L	<50	<10	<10	<10	NA	NA	<10
1,1,2-Trichloroethane	79-00-5	8.1	14	ug/L	<1	<1	<1	<1	NA	NA	<1
1,1-Dichloroethane	75-34-3	67	130	ug/L	<1	<1	<1	<1	NA	NA	<1
1,1-Dichloroethene	75-35-4	170	330	ug/L	<1	<1	<1	<1	NA	NA	<1
1,2-Dichloroethane	107-06-2	21	41	ug/L	<1	<1	<1	<1	NA	NA	<1
Carbon disulfide	75-15-0	970	2100	ug/L	<5	<1	<1	<1	NA	NA	<1
cis-1,2-Dichloroethene	156-59-2	48	95	ug/L	6	<1	<1	<1	NA	NA	<1
trans-1,2-Dichloroethene	156-60-5	200	390	ug/L	<1	<1	<1	<1	NA	NA	<1
Chloroform (Trichloromethane)	67-66-3	7.6	14	ug/L	<1	<1	<1	<1	NA	NA	<1
Trichloroethene	79-01-6	6.2	10	ug/L	1.0	<1	<1	<1	NA	NA	<1
Tetrachloroethene	127-18-4	97	130	ug/L	<1	<1	<1	<1	NA	NA	<1
Vinyl chloride	75-01-4	0.96	2.1	ug/L	3	1	<1	<1	NA	NA	<1
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	<5	NA	NA	NA	NA	NA	NA
Benzene	71-43-2	14	28	ug/L	<1	<1	<1	<1	NA	NA	<1
Ethylbenzene	100-41-4	45	74	ug/L	<1	<1	<1	<1	NA	NA	<1
Toluene	108-88-3	23,000	41,000	ug/L	<1	<1	<1	<1	NA	NA	<1
Xylene (total)	1330-20-7	1,200	2,000	ug/L	<2	NA	NA	NA	NA	NA	NA
Methyl tert butyl ether (MTBE)	1634-04-4	4,000	7,400	ug/L	<5	<1	<1	<1	NA	NA	<1
Naphthalene	91-20-3	73	130	ug/L	<5	NA	NA	NA	NA	NA	NA
2-Butanone (Methyl ethyl ketone) (MEK)	78-93-3	1,500,000	4,300,000	ug/L	<25	<10	<10	<10	NA	NA	<10
1,2,4-Trimethylbenzene	95-63-6	440	670	ug/L	<1	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	108-67-8	310	470	ug/L	<1	NA	NA	NA	NA	NA	NA
Cyclohexane	110-82-7	1,100	2,000	ug/L	NA	<1	<1	<1	NA	NA	<1
Isopropyl benzene	98-82-8	10	15	ug/L	<5	<1	<1	<1	NA	NA	<1
o-Xylene	95-47-6	1,200	2,000	ug/L	<1	<1	<1	<1	NA	NA	<1
m&p-Xylene	M/P-XYLENE	1,200	2,000	ug/L	<2	<2	<2	<2	NA	NA	<2
Semivolatile Organics											
1,4-Dioxane	123-91-1	14,000	56,000	ug/L	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	<5	<1	<1	NA	<5	<5	<1
Naphthalene	91-20-3	73	130	ug/L	<5	<1	<1	NA	<5	<5	2
Anthracene	120-12-7	43	43	ug/L	NA	<1	<1	NA	<5	<5	<1
Acenaphthene	83-32-9	3,900	3,900	ug/L	NA	<1	<1	NA	<5	<5	<1
Acenaphthylene	208-96-8	65	65	ug/L	NA	<1	<1	NA	<5	<5	<1
Benzo(a)anthracene	56-55-3	9.4	9.4	ug/L	NA	<1	<1	NA	<1	<1	<1
Fluorene	86-73-7	1,700	1,700	ug/L	NA	<1	<1	NA	<5	<5	<1
Phenanthrene	85-01-8	0.077	290	ug/L	NA	1	<1	NA	<2	<2	1
Pyrene	129-00-0	140	140	ug/L	NA	<1	<1	NA	<5	<5	<1
All other Semivolatile Organics	NA	NA	NA	ug/L	NA	Not detected above RL	Not detected above RL	NA	Not detected above RL	Not detected above RL	Not detected above RL

Table 3
Summary of Groundwater Sample Analytical Results - VI Evaluation
RACER Trust
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	CAS Number	EGLE Residential SSVIAC Groundwater	Res GW Not in Contact EGLE 2020 DRAFT VI Criteria	Units	VAP-A5.7-MB257_02172020 5 - 10 02/17/20 VAP-A5.7-MB257_02172020	MW-13-35 25 - 30 09/20/13 MW-13-35 (092013)	MW-13-35 25 - 30 11/05/13 MW-13-35 (11513)_110513	MW-13-35 25 - 30 05/11/18 MW-13-35_051118	MW-13-35 25 - 30 02/18/20 MW-13-35_02182020	MW-13-35 25 - 30 08/31/20 MW-13-35_083120	MW-13-36R 5.5 - 10.5 12/18/13 MW-13-36R (12-18-13)
Semivolatile Organics-Filtered											
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	73	130	ug/L	NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	43	43	ug/L	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	3,900	3,900	ug/L	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	65	65	ug/L	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	9.4	9.4	ug/L	NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	1,700	1,700	ug/L	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	0.077	290	ug/L	NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	140	140	ug/L	NA	NA	NA	NA	NA	NA	NA

Notes:
CAS - Chemical Abstract Service Number
EGLE - Michigan Department of Environment, Great Lakes and Energy
SSVIAC - Site Specific Volatilization to Indoor Air Criteria
RES - Residential
ug/L - micrograms per Liter
NA - constituent not analyzed for
*Values that are bolded and highlighted exceed the SSVIAC
J - value is estimated

Table 3
 Summary of Groundwater Sample Analytical Results - VI Evaluation
 RACER Trust
 Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	CAS Number	EGLE Residential SSVIAC Groundwater	Res GW Not in Contact EGLE 2020 DRAFT VI Criteria	Units	MW-13-36R 5.5 - 10.5 02/20/14 MW-13-36R (02202014)	MW-13-36R 5.5 - 10.5 02/17/20 MW-13-36R_02172020	MW-13-36R 5.5 - 10.5 08/31/20 MW-13-36R_083120	MW-20-131 5 - 10 12/02/20 MW-20-131_120220	MW-20-132 6 - 11 12/02/20 MW-20-132_120220	SVMP-20-01 5 - 10 11/24/20 SVMP-20-01_11242020
Volatile Organics										
1,2,3-Trimethylbenzene	526-73-8	800	1200	ug/L	NA	NA	NA	<1	<1	<1
N-Propylbenzene	103-65-1	4,100	6,100	ug/L	NA	NA	NA	<1	<1	<1
1,2-Dibromoethane (Ethylene dibromide)	106-93-4	2.9	3.8	ug/L	<1	NA	NA	<1	<1	<1
1,4-Dioxane	123-91-1	14,000	56,000	ug/L	<5	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	8,700	14,000	ug/L	<1	NA	NA	<1	<1	<1
Acetone	67-64-1	12,000,000	40,000,000	ug/L	<10	NA	NA	<50	<50	<50
1,1,2-Trichloroethane	79-00-5	8.1	14	ug/L	<1	NA	NA	<1	<1	<1
1,1-Dichloroethane	75-34-3	67	130	ug/L	<1	NA	NA	<1	<1	<1
1,1-Dichloroethene	75-35-4	170	330	ug/L	<1	NA	NA	<1	<1	<1
1,2-Dichloroethane	107-06-2	21	41	ug/L	<1	NA	NA	<1	<1	<1
Carbon disulfide	75-15-0	970	2100	ug/L	<1	NA	NA	<5	<5	<5
cis-1,2-Dichloroethene	156-59-2	48	95	ug/L	<1	NA	NA	3	9	4
trans-1,2-Dichloroethene	156-60-5	200	390	ug/L	<1	NA	NA	<1	<1	<1
Chloroform (Trichloromethane)	67-66-3	7.6	14	ug/L	<1	NA	NA	<1	<1	<1
Trichloroethene	79-01-6	6.2	10	ug/L	<1	NA	NA	<1	<1	<1
Tetrachloroethene	127-18-4	97	130	ug/L	<1	NA	NA	<1	<1	<1
Vinyl chloride	75-01-4	0.96	2.1	ug/L	<1	NA	NA	3	1	3
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	NA	NA	NA	<5	<5	<5
Benzene	71-43-2	14	28	ug/L	<1	NA	NA	<1	<1	<1
Ethylbenzene	100-41-4	45	74	ug/L	<1	NA	NA	<1	<1	<1
Toluene	108-88-3	23,000	41,000	ug/L	<1	NA	NA	<1	<1	<1
Xylene (total)	1330-20-7	1,200	2,000	ug/L	NA	NA	NA	<3	<3	<3
Methyl tert butyl ether (MTBE)	1634-04-4	4,000	7,400	ug/L	<1	NA	NA	<5	<5	<5
Naphthalene	91-20-3	73	130	ug/L	NA	NA	NA	<5	<5	<5
2-Butanone (Methyl ethyl ketone) (MEK)	78-93-3	1,500,000	4,300,000	ug/L	<10	NA	NA	<25	<25	<25
1,2,4-Trimethylbenzene	95-63-6	440	670	ug/L	NA	NA	NA	<1	<1	<1
1,3,5-Trimethylbenzene	108-67-8	310	470	ug/L	NA	NA	NA	<1	<1	<1
Cyclohexane	110-82-7	1,100	2,000	ug/L	<1	NA	NA	NA	NA	NA
Isopropyl benzene	98-82-8	10	15	ug/L	<1	NA	NA	<5	<5	<5
o-Xylene	95-47-6	1,200	2,000	ug/L	1	NA	NA	<1	<1	<1
m&p-Xylene	M/P-XYLENE	1,200	2,000	ug/L	<2	NA	NA	<2	<2	<2
Semivolatile Organics										
1,4-Dioxane	123-91-1	14,000	56,000	ug/L	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	<1	<5 [<u><5</u>]	<5 [<u><5</u>]	NA	NA	NA
Naphthalene	91-20-3	73	130	ug/L	1	<5 [<u><5</u>]	<5 [<u><5</u>]	NA	NA	NA
Anthracene	120-12-7	43	43	ug/L	<1	<5 [<u><5</u>]	<5 [<u><5</u>]	NA	NA	NA
Acenaphthene	83-32-9	3,900	3,900	ug/L	<1	<5 [<u><5</u>]	<5 [<u><5</u>]	NA	NA	NA
Acenaphthylene	208-96-8	65	65	ug/L	<1	<5 [<u><5</u>]	<5 [<u><5</u>]	NA	NA	NA
Benzo(a)anthracene	56-55-3	9.4	9.4	ug/L	<1	<1 [<u><1</u>]	<1 [<u><1</u>]	NA	NA	NA
Fluorene	86-73-7	1,700	1,700	ug/L	<1	<5 [<u><5</u>]	<5 [<u><5</u>]	NA	NA	NA
Phenanthrene	85-01-8	0.077	290	ug/L	<1	<2 [<u><2</u>]	<2 [<u><2</u>]	NA	NA	NA
Pyrene	129-00-0	140	140	ug/L	<1	<5 [<u><5</u>]	<5 [<u><5</u>]	NA	NA	NA
All other Semivolatile Organics	NA	NA	NA	ug/L	Not detected above RL	Not Detected Above RL	Not Detected Above RL	NA	NA	NA

Table 3
Summary of Groundwater Sample Analytical Results - VI Evaluation
RACER Trust
Lansing, Michigan

Location ID: Sample Depth(ft): Date Collected: Sample Name:	CAS Number	EGLE Residential SSVIAC Groundwater	Res GW Not in Contact EGLE 2020 DRAFT VI Criteria	Units	MW-13-36R 5.5 - 10.5 02/20/14 MW-13-36R (02202014)	MW-13-36R 5.5 - 10.5 02/17/20 MW-13-36R_02172020	MW-13-36R 5.5 - 10.5 08/31/20 MW-13-36R_083120	MW-20-131 5 - 10 12/02/20 MW-20-131_120220	MW-20-132 6 - 11 12/02/20 MW-20-132_120220	SVMP-20-01 5 - 10 11/24/20 SVMP-20-01_11242020
Semivolatile Organics-Filtered										
2-Methylnaphthalene	91-57-6	1,300	2,000	ug/L	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	73	130	ug/L	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	43	43	ug/L	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	3,900	3,900	ug/L	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	65	65	ug/L	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	9.4	9.4	ug/L	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	1,700	1,700	ug/L	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	0.077	290	ug/L	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	140	140	ug/L	NA	NA	NA	NA	NA	NA

Notes:

CAS - Chemical Abstract Service Number
 EGLE - Michigan Department of Environment, Great Lakes and Energy
 SSVIAC - Site Specific Volatilization to Indoor Air Criteria
 RES - Residential
 ug/L - micrograms per Liter
 NA - constituent not analyzed for
 *Values that are bolded and highlighted exceed the SSVIAC
 J - value is estimated

Figures



SB-A1-RQ78 (12-13 ft bgs)
 Sampled in 2012
 Exceeds for Isopropyl benzene (410 mg/kg);
 Naphthalene (3,000 J mg/kg)

SB-A1-RS78 (10.5-11.5 ft bgs)
 Sampled in 2012
 Exceeds for Phenanthrene (20 J µg/L)

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
 T:\RACER\Buffalo\MXDs\VI Summary Memo\Figure 1 - Building Evaluation2020.mxd PLOTTED: 2/4/2021 10:55:00 AM BY: KPullen

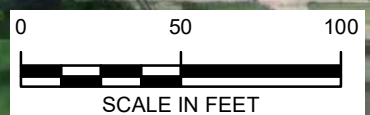
- LEGEND**
- HPT-VAP BORING LOCATION
 - SOIL BORING LOCATION
 - ▲ PERCHED ZONE MONITORING WELL
 - ▲ WEATHERED BEDROCK MONITORING WELL
 - SOIL ABOVE SITE SPECIFIC VI CRITERIA
 - GW ABOVE SITE SPECIFIC VI CRITERIA



EGLE SITE SPECIFIC VI GW CRITERIA:
 PHENANTHRENE = 0.97 µg/L

EGLE SITE SPECIFIC VI SOIL CRITERIA:
 NAPHTHALENE = 2,800 µg/kg
 ISOPROPYL BENZENE = 160 µg/kg

NOTES:
 THE SSVIAC CRITERIA USED FOR COMPARISON APPLIES TO A NONRESIDENTIAL STRUCTURE GREATER THAN 50,000 SQUARE FEET WITH A SLAB ON GRADE CONSTRUCTION, A DEPTH TO GROUNDWATER OF 10 TO 15 FT BGS, AND A USDA SOIL TYPE OF SAND.



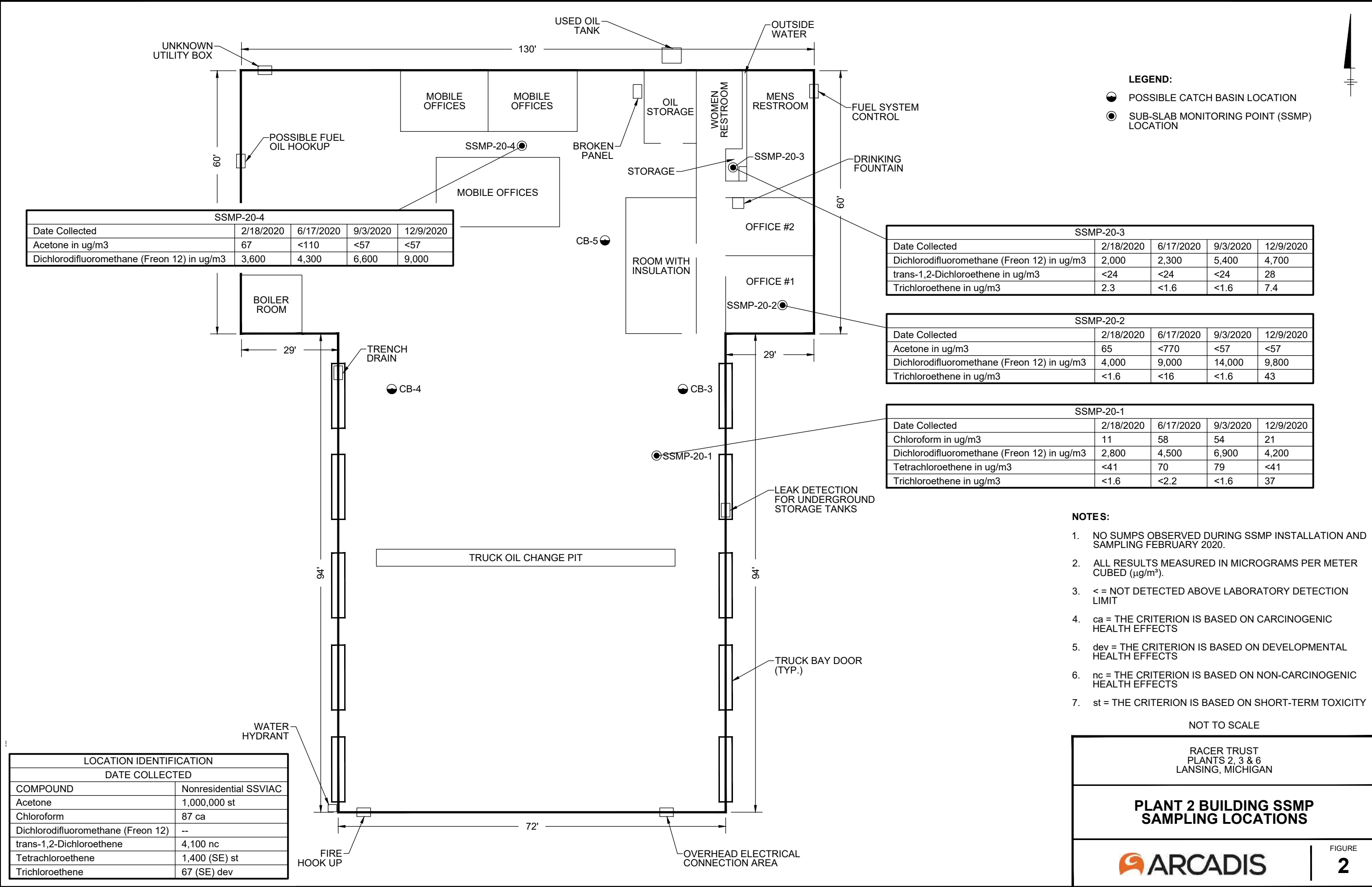
RACER TRUST
 PLANTS 2, 3 & 6
 LANSING, MICHIGAN

SSVIAC EXCEEDANCES NEAR BUILDING AT PLANT 2



FIGURE
1

CITY: MANCHESTER, DIV/GROUP: ENV/CAD, DB: B.SMALL, PM: TM, C:\Users\BSSM\OneDrive\Work\Projects\Plant 2\Interior.dwg LAYOUT: 1 - RACER TRUST\Project Files\RACER LANSING PLANTS 2,3,6\202101-DWG\VI-F03-INTERIOR.dwg PAGES: 1 - 1:18 PM ACADVER: 23.1.4 (LMS TECH) PAGES: 1 - 1:18 PM PLOTTED: 1/27/2021 1:19 PM BY: SMALL, BRIAN



LEGEND:

- POSSIBLE CATCH BASIN LOCATION
- SUB-SLAB MONITORING POINT (SSMP) LOCATION

SSMP-20-4				
Date Collected	2/18/2020	6/17/2020	9/3/2020	12/9/2020
Acetone in ug/m3	67	<110	<57	<57
Dichlorodifluoromethane (Freon 12) in ug/m3	3,600	4,300	6,600	9,000

SSMP-20-3				
Date Collected	2/18/2020	6/17/2020	9/3/2020	12/9/2020
Dichlorodifluoromethane (Freon 12) in ug/m3	2,000	2,300	5,400	4,700
trans-1,2-Dichloroethene in ug/m3	<24	<24	<24	28
Trichloroethene in ug/m3	2.3	<1.6	<1.6	7.4

SSMP-20-2				
Date Collected	2/18/2020	6/17/2020	9/3/2020	12/9/2020
Acetone in ug/m3	65	<770	<57	<57
Dichlorodifluoromethane (Freon 12) in ug/m3	4,000	9,000	14,000	9,800
Trichloroethene in ug/m3	<1.6	<16	<1.6	43

SSMP-20-1				
Date Collected	2/18/2020	6/17/2020	9/3/2020	12/9/2020
Chloroform in ug/m3	11	58	54	21
Dichlorodifluoromethane (Freon 12) in ug/m3	2,800	4,500	6,900	4,200
Tetrachloroethene in ug/m3	<41	70	79	<41
Trichloroethene in ug/m3	<1.6	<2.2	<1.6	37

LOCATION IDENTIFICATION	
DATE COLLECTED	
COMPOUND	Nonresidential SSVIAC
Acetone	1,000,000 st
Chloroform	87 ca
Dichlorodifluoromethane (Freon 12)	--
trans-1,2-Dichloroethene	4,100 nc
Tetrachloroethene	1,400 (SE) st
Trichloroethene	67 (SE) dev

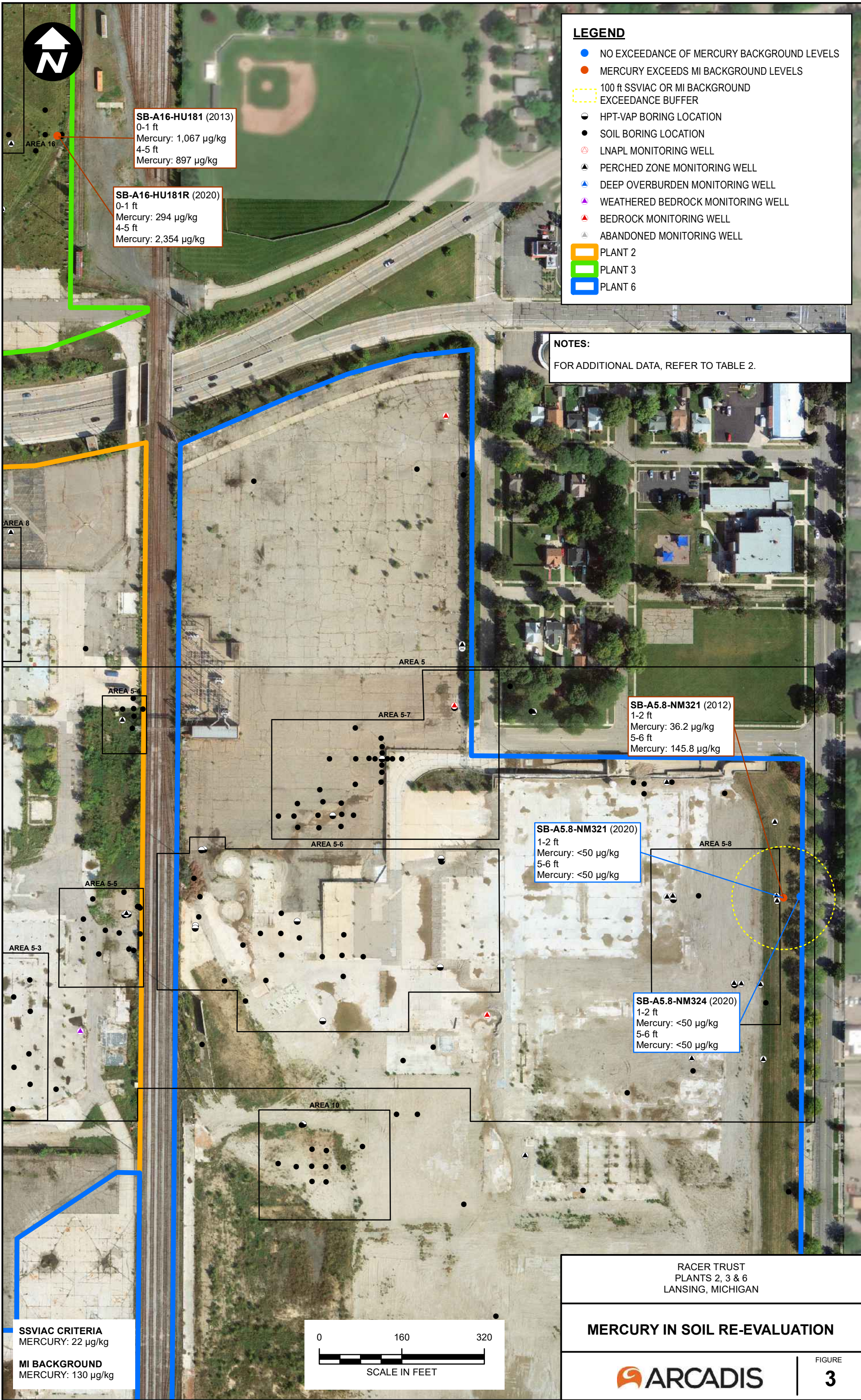
- NOTES:**
- NO SUMPS OBSERVED DURING SSMP INSTALLATION AND SAMPLING FEBRUARY 2020.
 - ALL RESULTS MEASURED IN MICROGRAMS PER METER CUBED ($\mu\text{g}/\text{m}^3$).
 - < = NOT DETECTED ABOVE LABORATORY DETECTION LIMIT
 - ca = THE CRITERION IS BASED ON CARCINOGENIC HEALTH EFFECTS
 - dev = THE CRITERION IS BASED ON DEVELOPMENTAL HEALTH EFFECTS
 - nc = THE CRITERION IS BASED ON NON-CARCINOGENIC HEALTH EFFECTS
 - st = THE CRITERION IS BASED ON SHORT-TERM TOXICITY

NOT TO SCALE

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

PLANT 2 BUILDING SSMP SAMPLING LOCATIONS

ARCADIS | **FIGURE 2**



LEGEND

- NO EXCEEDANCE OF MERCURY BACKGROUND LEVELS
- MERCURY EXCEEDS MI BACKGROUND LEVELS
- 100 ft SSVIAC OR MI BACKGROUND EXCEEDANCE BUFFER
- HPT-VAP BORING LOCATION
- SOIL BORING LOCATION
- ⊕ LNAPL MONITORING WELL
- ▲ PERCHED ZONE MONITORING WELL
- ▲ DEEP OVBURDEN MONITORING WELL
- ▲ WEATHERED BEDROCK MONITORING WELL
- ▲ BEDROCK MONITORING WELL
- ▲ ABANDONED MONITORING WELL
- PLANT 2
- PLANT 3
- PLANT 6

NOTES:
 FOR ADDITIONAL DATA, REFER TO TABLE 2.

SB-A16-HU181 (2013)
 0-1 ft
 Mercury: 1,067 µg/kg
 4-5 ft
 Mercury: 897 µg/kg

SB-A16-HU181R (2020)
 0-1 ft
 Mercury: 294 µg/kg
 4-5 ft
 Mercury: 2,354 µg/kg

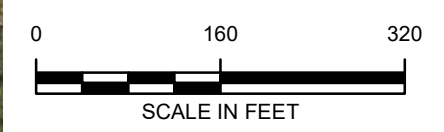
SB-A5.8-NM321 (2012)
 1-2 ft
 Mercury: 36.2 µg/kg
 5-6 ft
 Mercury: 145.8 µg/kg

SB-A5.8-NM321 (2020)
 1-2 ft
 Mercury: <50 µg/kg
 5-6 ft
 Mercury: <50 µg/kg

SB-A5.8-NM324 (2020)
 1-2 ft
 Mercury: <50 µg/kg
 5-6 ft
 Mercury: <50 µg/kg

SSVIAC CRITERIA
 MERCURY: 22 µg/kg

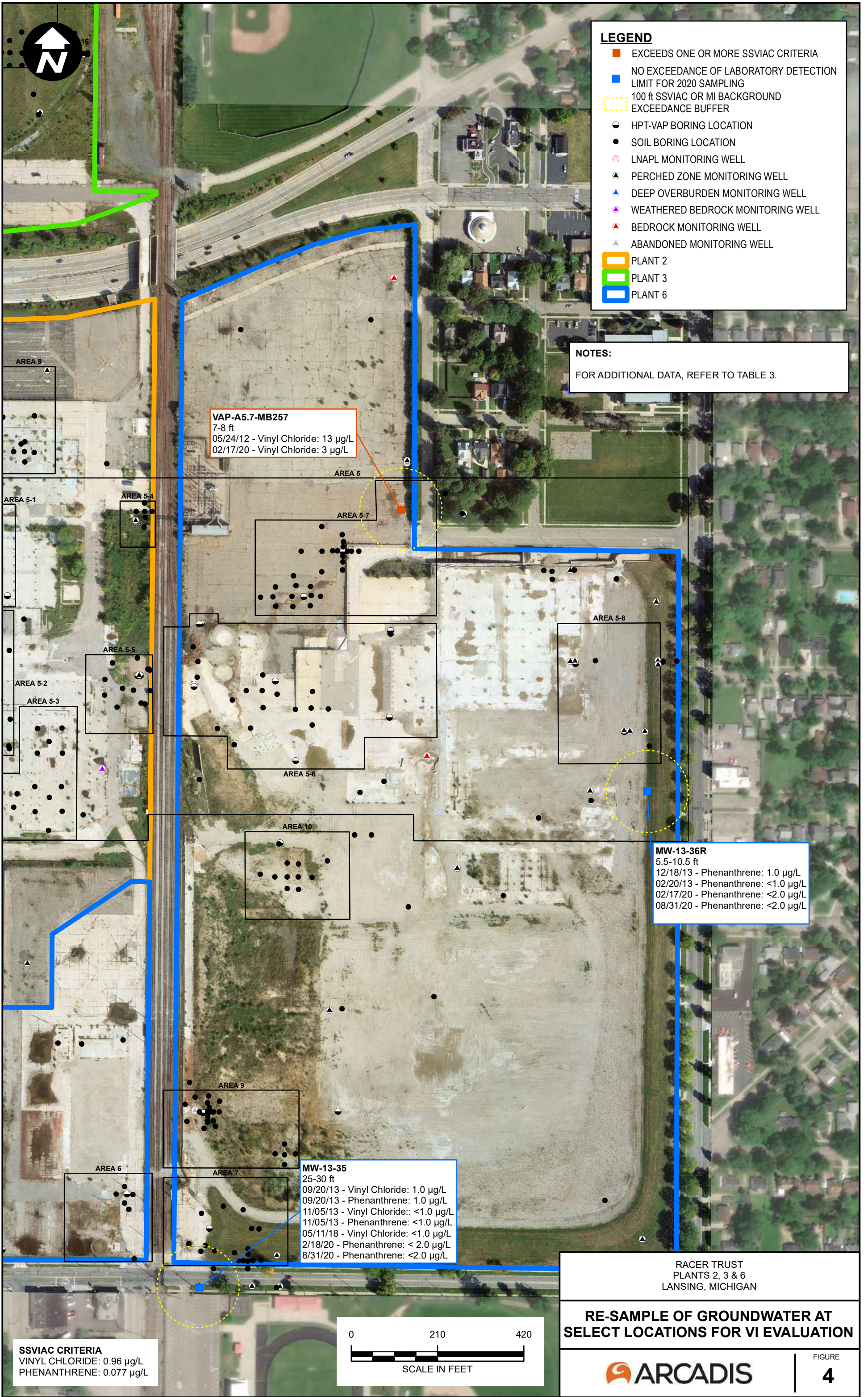
MI BACKGROUND
 MERCURY: 130 µg/kg



RACER TRUST
 PLANTS 2, 3 & 6
 LANSING, MICHIGAN

MERCURY IN SOIL RE-EVALUATION

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
 T:_ENV\RACER\Buffalo\MXDs\VI Summary Memo\Figure 3 - Re-Sample of GW_2020.mxd PLOTTED: 1/29/2021 3:40:00 PM BY: KPullen



LEGEND

- EXCEEDS ONE OR MORE SSVIAC CRITERIA
- NO EXCEEDANCE OF LABORATORY DETECTION LIMIT FOR 2020 SAMPLING
- 100 ft SSVIAC OR MI BACKGROUND EXCEEDANCE BUFFER
- HPT-VAP BORING LOCATION
- SOIL BORING LOCATION
- LNAPL MONITORING WELL
- ▲ PERCHED ZONE MONITORING WELL
- ▲ DEEP OVERBURDEN MONITORING WELL
- ▲ WEATHERED BEDROCK MONITORING WELL
- ▲ BEDROCK MONITORING WELL
- ▲ ABANDONED MONITORING WELL
- PLANT 2
- PLANT 3
- PLANT 6

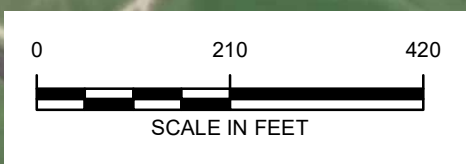
NOTES:
 FOR ADDITIONAL DATA, REFER TO TABLE 3.

VAP-A5.7-MB257
 7-8 ft
 05/24/12 - Vinyl Chloride: 13 µg/L
 02/17/20 - Vinyl Chloride: 3 µg/L

MW-13-36R
 5.5-10.5 ft
 12/18/13 - Phenanthrene: 1.0 µg/L
 02/20/13 - Phenanthrene: <1.0 µg/L
 02/17/20 - Phenanthrene: <2.0 µg/L
 08/31/20 - Phenanthrene: <2.0 µg/L

MW-13-35
 25-30 ft
 09/20/13 - Vinyl Chloride: 1.0 µg/L
 09/20/13 - Phenanthrene: 1.0 µg/L
 11/05/13 - Vinyl Chloride: <1.0 µg/L
 11/05/13 - Phenanthrene: <1.0 µg/L
 05/11/18 - Vinyl Chloride: <1.0 µg/L
 2/18/20 - Phenanthrene: < 2.0 µg/L
 8/31/20 - Phenanthrene: <2.0 µg/L

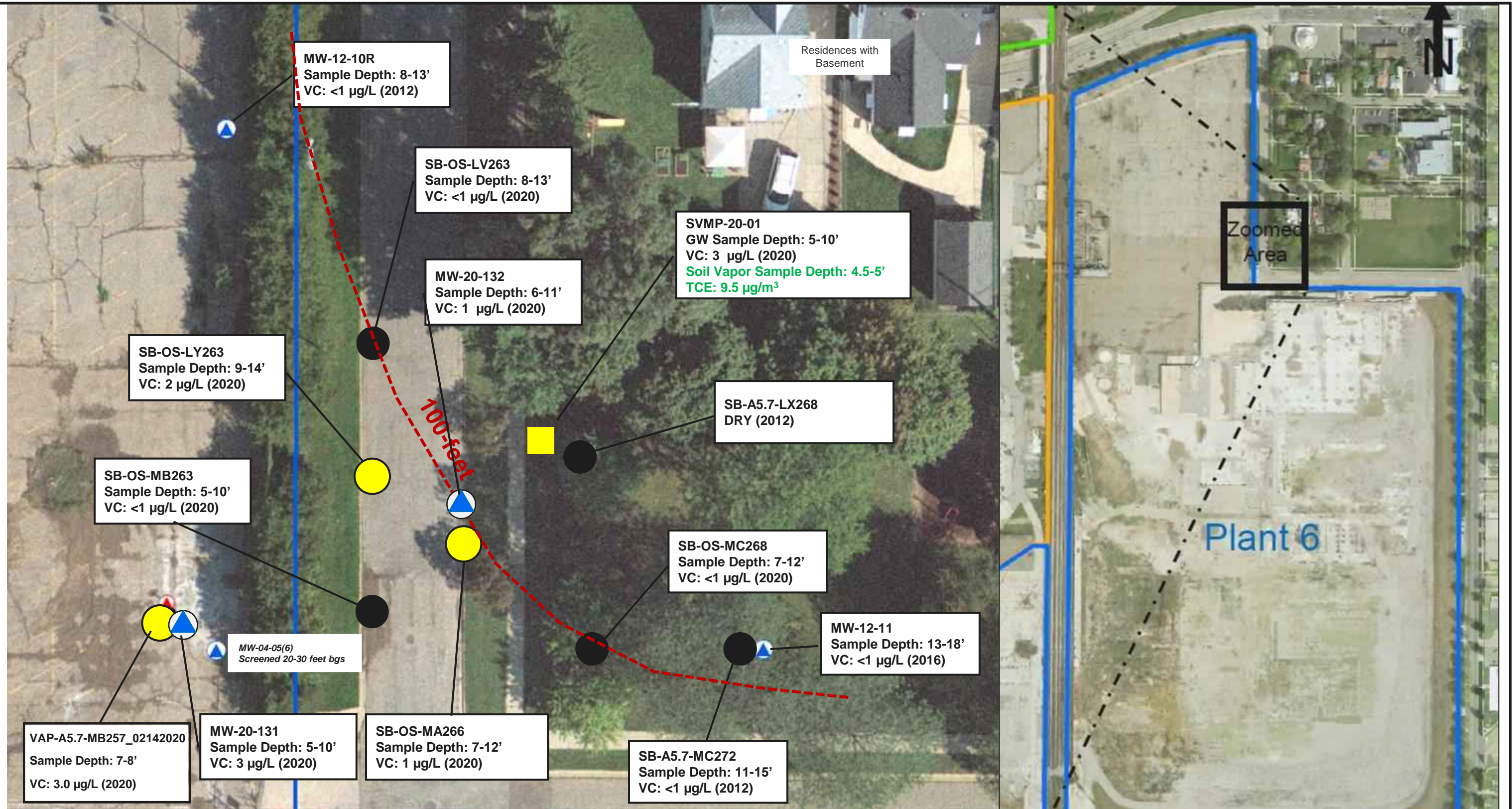
SSVIAC CRITERIA
 VINYL CHLORIDE: 0.96 µg/L
 PHENANTHRENE: 0.077 µg/L



RACER TRUST
 PLANTS 2, 3 & 6
 LANSING, MICHIGAN

RE-SAMPLE OF GROUNDWATER AT SELECT LOCATIONS FOR VI EVALUATION





Legend

VAP Groundwater Analytical Results

- <SSVIAC
- >SSVIAC

Monitoring Wells

- Perched Monitoring Well
- Bedrock Monitoring Well

Soil Vapor Monitoring Point (SVMP)

- (exceeds SSVIAC for Vinyl Chloride in GW, does not exceed SSVIAC in soil vapor)

Notes:

SSVIAC – Site Specific Volatilization to Indoor Air Criteria
 µg/l – micrograms per liter
 VC – Vinyl Chloride
 Groundwater results = Black, SVMP results = Green



RACER TRUST PLANT 6
LANSING, MICHIGAN

SUMMARY OF GROUNDWATER AND SVMP ANALYTICAL RESULTS

ARCADIS Design & Consultancy for natural and built assets
FIGURE
5

2/4/2021 10:11:38 AM

Attachment 1

SSMP/SVMP Field Sampling Logs/Notes

Office Name & Address (Reporting Information) Arcadis - Novi 29850 Cabot Drive, Suite 300 Novi, MI 48377		Project Name SSMP Sampling	
Field Manager Tiffany Under		Project Number 304297200101	
Site Address 2710 W Michigan Ave Livonia, MI 48157		Station Name, Phone Number, Email Austin Westhuis, 617-719-0214, Austin.Westhuis@arcadis.com	
Phone Numbers Tel: 810-225-1928, Fax: 248-984-2241 Email: Tiffany.Under@arcadis.com		Sample Container Size (L, 2.1, 6L) 1L Bottle Vac	
Helium Detector Used Fibertec Qualitative		Lab Fibertec	

Sample ID	Sample Location Description	Date	Shut In Test Pass/Fail?	Pre-sample Purge Reading (ppm)	Shut-in Helium Concentration (%)	Post-Sample Purge Reading (ppm)	Helium Test Pass/Fail?	Purge Volume (mL)	Purge Rate (mL/min)	Canister No.	Time Collected Start	Canister Filling (in Hg)	Canister End	Canister Pressure (in Hg)	Flow Controller No	Notes
SSMP-EXAMPLE (02172020)	West side of station building behind cashier counter	2/17/20	Pass	0	80	15	Pass	120	120	2595	0835	-30	0841	-5	10002434	Debris noted under steel cap and in annular space around vapor pin. Cleaned out prior to sampling.
SSMP-20-1_02182020	Located in large garage area	2/18/20	—	—	—	—	Pass	120	120	2286	1123	-25	1128	-5	2636	
SSMP-20-2_02182020	located in office #1	2/18/20	—	—	—	—	Pass	120	120	2290	1234	-27	1240	-5	1029	
SSMP-20-3_02182020	located in Storage Closet	2/18/20	—	—	—	—	Pass	120	120	2301	1338	-25	1344	-5	2503	
SSMP-20-4_02182020	located between mobile offices	2/18/20	—	—	—	—	Pass	120	120	3190	1415	-28	1420	-5	2850	

Meteorological Data				General Notes or Observations	
Date	Time	Temp. (°F)		% Humidity	Barometric Pressure (in. Hg)
		Indoor	Outdoor		
2/18/20	10:30	56	30	74	29.93

Air Parameters (computed after sample collection)					
Location ID	CH4 %	CH4 LEL %	O2 %	PID (ppm)	Differential Pressure (in. Water Column)
SSMP-EXAMPLE	1.8	30	12.6	2.6	-0.12
SSMP-20-1	0.0	0	13.3	0.0	—
SSMP-20-2	0.0	0	20.4	0.0	—
SSMP-20-3	0.0	0	20.9	0.0	—
SSMP-20-4	0.0	0	17.8	0.0	—

CO2
4.0
2.8
2.1
5.0

RACER Lansing, 30042872, Ingham , , Lansing, 48917, Michigan, US, W Michigan Ave, 2710

Created	2020-06-17 15:14:41 UTC by Austin Westhuis
Updated	2020-06-17 18:25:53 UTC by Austin Westhuis
Location	42.7348153945457, -84.586745817293

General Information

Office Name	Lansing
Office Address	No I, MI
Project Name	RACER Lansing
Project Number	30042872
client for reporting	RACER Trust
Client	RACER Trust
Site Address	2710 W Michigan Ave Lansing, Michigan 48917
Field Manager	Tiffany Linder
Phone Number	810-225-1928
Fax Number	248-994-2241
Special Instructions	None
Email Address for Result Reporting	Tiffany.Linder@arcadis.com
Helium Detector Used	Quantitative
Helium Leak Test Method	Quantitative Helium Shroud (Fibertec rental)

Sampler Details

Sampler Name	Austin Westhuis
Sampler Phone Number	517-719-0214
Sampler Email Address	Austin.Westhuis@arcadis.com

Lab Sample Information

Canister Type	Bottle Vac
Summa Canister Size	1 L
Lab	Fibertec Environmental Services

SSMP-20-01

Sample ID	SSMP-20-01
Date	2020-06-17

Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (ppm)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	40
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0.5
Helium Test	Pass

Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length))

Purge Volume (mL)	120
Purge Rate (mL/min)	120
Canister No.	3669
Flow Controller Number	10002854
Sample Collection Start Time	11:37
Starting Canister Pressure (in Hg)	-28
Sample Collection End Time	11:44
Ending Canister Pressure (in Hg)	-5
Notes	NA

Air Parameters (completed after sample collection)

Location ID	SSMP-20-1
CH4 (%)	0
CH4 LEL (%)	0
O2 (%)	17.4
CO2 (%)	4.9
PID (ppm)	0

SSMP-20-02

Sample ID	SSMP-20-02
Date	2020-06-17

Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (ppm)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	40
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0.3
Helium Test	Pass

Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length)

Purge Volume (mL)	120
Purge Rate (mL/min)	120
Canister No.	3666
Flow Controller Number	10001197
Sample Collection Start Time	12:16
Starting Canister Pressure (in Hg)	-26
Sample Collection End Time	12:21
Ending Canister Pressure (in Hg)	-5
Notes	NA

Air Parameters (completed after sample collection)

Location ID	SSMP-20-2
CH4 (%)	0
CH4 LEL (%)	0

O2 (%)	18.5
CO2 (%)	3.2
PID (ppm)	0

SSMP-20-03

Sample ID	SSMP-20-03
Date	2020-06-17

Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (ppm)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	40
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0.2
Helium Test	Pass
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length))	
Purge Volume (mL)	120
Purge Rate (mL/min)	120
Canister No.	2904
Flow Controller Number	10002827
Sample Collection Start Time	13:13
Starting Canister Pressure (in Hg)	-26
Sample Collection End Time	13:20
Ending Canister Pressure (in Hg)	-5
Notes	NA

Air Parameters (completed after sample collection)

Location ID	SSMP-3
CH4 (%)	0
CH4 LEL (%)	0
O2 (%)	19.9
CO2 (%)	2.3
PID (ppm)	0

SSMP-20-04

Sample ID	SSMP-20-04
Date	2020-06-17

Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (ppm)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	40
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	

Helium Reading in Purged Vapor (%)	0.3
Helium Test	Pass
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length))	
Purge Volume (mL)	120
Purge Rate (mL/min)	120
Canister No.	3441
Flow Controller Number	10001221
Sample Collection Start Time	14:00
Starting Canister Pressure (in Hg)	-30
Sample Collection End Time	14:06
Ending Canister Pressure (in Hg)	-5
Notes	NA

Air Parameters (completed after sample collection)

Location ID	SSMP-4
CH4 (%)	0
CH4 LEL (%)	0
O2 (%)	17.9
CO2 (%)	5.6
PID (ppm)	0

2020-06-17, 11:15

Meteorological Data Date	2020-06-17
Time	11:15
Indoor Temperature (Degree F)	79
Outdoor Temperature (Degree F)	79
Humidity (%)	34
Barometric Pressure (in.)	30.26
Are you connected to the internet (WiFi or data plan)?	Yes
Get weather data from the National Weather Service website for your current location?	N/A
Weather	77.00 degrees F and Mostly Clear
General Notes or Observations	Using Fibertec Quatitative Helium Shroud

RACER Lansing, 30042872, , , Lansing, , MI, , ,

Created	2020-09-03 14:57:44 UTC by Austin Westhuis
Updated	2020-09-03 18:42:14 UTC by Austin Westhuis
Location	42.9834142188011, -83.7224576064234

General Information

Office Name	Lansing
Office Address	300 S. Washington Square, Suite 315, Lansing, MI 49426
Client	RACER Trust
Project Name	RACER Lansing
Project Number	30042872
Site Address	Lansing, MI
Field Manager	Tiffany Linder
Phone Number	810-225-1928
Special Instructions (specific analyte list, site specific instructions, specific contacts, etc.)	TO-15
Email Address for Result Reporting	Tiffany.Linder@arcadis.com
Leak Test Method	Helium Tracer Test
Helium Detector Used	Fibertec Environmental Services quantitative helium shroud kit

Sampler Details

Sampler Name	Austin Westhuis
Sampler Phone Number	517-719-0214
Sampler Email Address	austin.westhuis@arcadis.com

Lab Sample Information

Sample Media Type	Bottle Vac
Sample Media Size	1 L
Lab	Merit Laboratories

SSMP-20-01

Location ID	SSMP-20-01
Sample ID	SSMP-20-01
Sample Location Description	See Figure 3
Date	2020-09-03

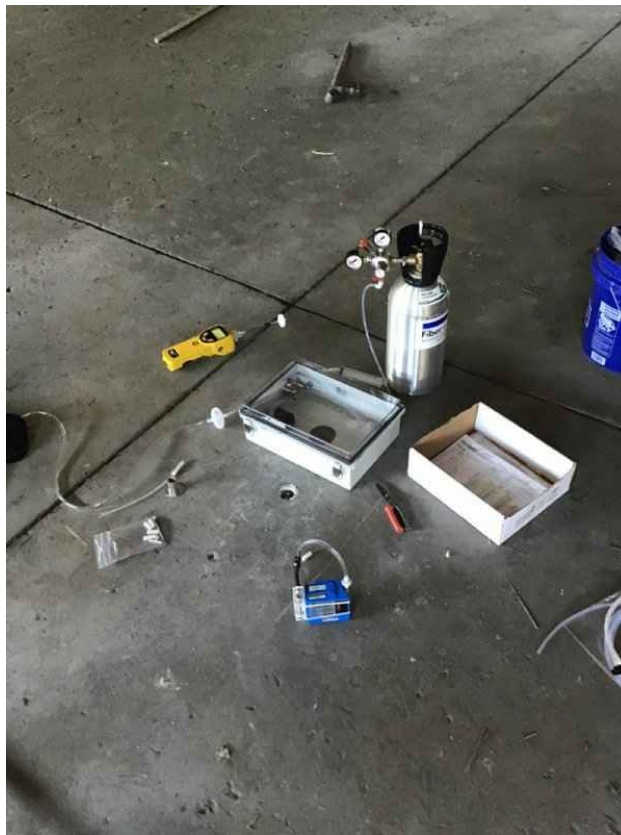
Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	41
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	1
Helium Test	Pass
Purge Method	Syringe

Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length)

Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No
Sample Media ID	SSMP-20-01(090320)
Flow Controller ID	10002320
Sample Collection Start Time	11:22
Starting Sampling Pressure (inches of Mercury)	-27
Middle Sample Collection Time	11:26
Middle Sampling Pressure (inches of Mercury)	-16
Sample Collection End Time	11:30
Ending Sampling Pressure (inches of Mercury)	-5
Notes	Bottle Vac #3061

Photos



Air Parameters (completed after sample collection)

Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	4.8
O2 (%)	14.6
PID (parts per million)	0

SSMP-20-02

Location ID	SSMP-20-02
Sample ID	SSMP-20-02
Sample Location Description	See Figure 3
Date	2020-09-03

Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	40
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0
Helium Test	Pass
Purge Method	Syringe
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length)	
Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No
Sample Media ID	SSMP-20-02(090320)
Flow Controller ID	10002625
Sample Collection Start Time	12:05
Starting Sampling Pressure (inches of Mercury)	-27
Middle Sample Collection Time	12:08
Middle Sampling Pressure (inches of Mercury)	-16
Sample Collection End Time	12:10
Ending Sampling Pressure (inches of Mercury)	-5
Notes	Bottle Vac #3189

Photos



Air Parameters (completed after sample collection)

Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	5.2
O2 (%)	14.8
PID (parts per million)	0

SSMP-20-03

Location ID	SSMP-20-03
Sample ID	SSMP-20-03
Sample Location Description	See Figure 3
Date	2020-09-03

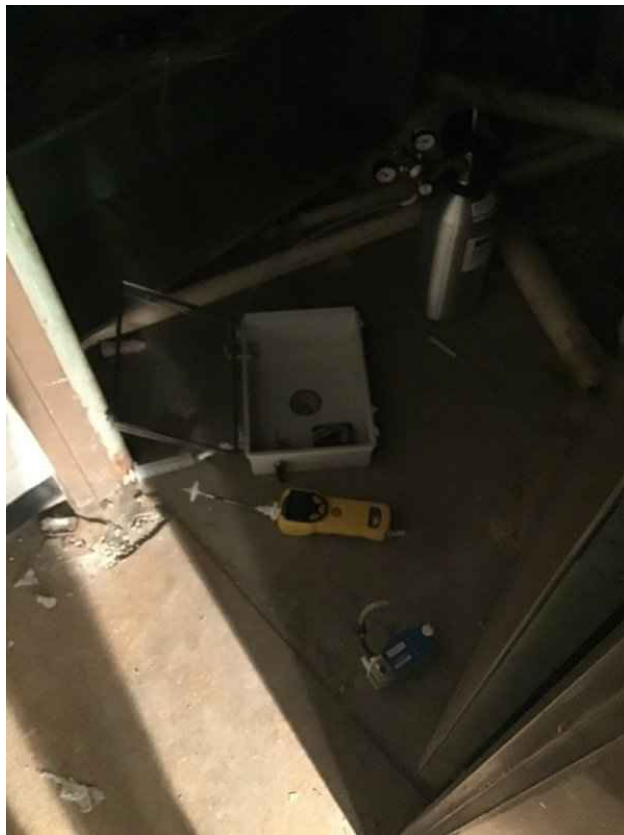
Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	46
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0.1
Helium Test	Pass
Purge Method	Syringe

Purge volume = $3 \times \pi \times \text{inner radius of tubing} \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length)

Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No
Sample Media ID	SSMP-20-03(090320)
Flow Controller ID	10001020
Sample Collection Start Time	12:42
Starting Sampling Pressure (inches of Mercury)	-28
Middle Sample Collection Time	12:45
Middle Sampling Pressure (inches of Mercury)	-16
Sample Collection End Time	12:48
Ending Sampling Pressure (inches of Mercury)	-5
Notes	Bottle Vac #3476

Photos



Air Parameters (completed after sample collection)

Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	3.2
O2 (%)	16.9
PID (parts per million)	0

SSMP-20-04

Location ID	SSMP-20-04
Sample ID	SSMP-20-04
Sample Location Description	See Figure 3
Date	2020-09-03

Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	42
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0.4
Helium Test	Pass
Purge Method	Syringe
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length)	
Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No
Sample Media ID	SSMP-20-04(090320)
Flow Controller ID	10003428
Sample Collection Start Time	14:09
Starting Sampling Pressure (inches of Mercury)	-29
Middle Sample Collection Time	14:13
Middle Sampling Pressure (inches of Mercury)	-16
Sample Collection End Time	14:16
Ending Sampling Pressure (inches of Mercury)	-5
Notes	Bottle Vac #3151

Photos



Air Parameters (completed after sample collection)

Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	5.1
O2 (%)	15.1
PID (parts per million)	0

2020-09-03, 09:30

Meteorological Data Date	2020-09-03
Time	09:30
Indoor Temperature (Degree F)	75
Outdoor Temperature (Degree F)	71
Relative Humidity (%)	70
Barometric Pressure (inches of Mercury)	30
Are you connected to the internet via data plan or WiFi?	Yes
Get weather data from National Weather Service Website for your current location?	N/A
weather	71.1 degrees F and Clear. The wind is blowing S/SW at 37.0 mph.
General Notes or Observations	None

RACER Lansing, 30042872, , , Lansing, , MI, , ,

Created	2020-12-09 14:50:15 UTC by Austin Westhuis
Updated	2020-12-09 19:57:01 UTC by Austin Westhuis
Location	42.9834142188011, -83.7224576064234

General Information

Office Name	Lansing
Office Address	300 S. Washington Square, Suite 315, Lansing, MI 49426
Client	RACER Trust
Project Name	RACER Lansing
Project Number	30042872
Site Address	Lansing, MI
Field Manager	Tiffany Linder
Phone Number	810-225-1928
Special Instructions (specific analyte list, site specific instructions, specific contacts, etc.)	TO-15 and TO-13A
Email Address for Result Reporting	Tiffany.Linder@arcadis.com
Leak Test Method	Helium Tracer Test
Helium Detector Used	Fibertec Environmental Services quantitative helium shroud kit

Sampler Details

Sampler Name	Austin Westhuis
Sampler Phone Number	517-719-0214
Sampler Email Address	austin.westhuis@arcadis.com

Lab Sample Information

Sample Media Type	Bottle Vac
Sample Media Size	1 L
Lab	Merit Laboratories

SSMP-20-01

Sample Collection Information

Location ID	SSMP-20-01
Sample ID	SSMP-20-01
Sample Location Description	See Figure 3
Is Duplicate associated with this Sample ID	No
Date	2020-12-09
Sample Media ID	SSMP-20-01(120920)
Flow Controller ID	10003399
Sample Collection Start Time	10:07
Starting Sampling Pressure (inches of Mercury)	-28
Middle Sample Collection Time	10:10
Middle Sampling Pressure (inches of Mercury)	-16
Middle Sampling Pressure (inches of Mercury)	-16
Ending Sampling Pressure (inches of Mercury)	-5

Sample Collection End Time

10:14

Notes

Bottle Vac #2648

Photos



Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	53.5
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0
Helium Test	Pass
Purge Method	Syringe
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length))	
Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No

Purged Soil Gas Parameters (completed after sample collection)

Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	5.1
O2 (%)	15

PID (parts per million) 0

SSMP-20-02

Sample Collection Information

Location ID	SSMP-20-02
Sample ID	SSMP-20-02
Sample Location Description	See Figure 3
Is Duplicate associated with this Sample ID	No
Date	2020-12-09
Sample Media ID	SSMP-20-02(120920)
Flow Controller ID	10003248
Sample Collection Start Time	11:22
Starting Sampling Pressure (inches of Mercury)	-26
Middle Sample Collection Time	11:25
Middle Sampling Pressure (inches of Mercury)	-16
Middle Sampling Pressure (inches of Mercury)	-16
Ending Sampling Pressure (inches of Mercury)	-5
Sample Collection End Time	11:28
Notes	Bottle Vac #2903

Photos



Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0

Shroud Helium Concentration should be at least 40% (10% in CA)

Shroud Helium Concentration (%)	63
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0
Helium Test	Pass
Purge Method	Syringe
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length)	
Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No

Purged Soil Gas Parameters (completed after sample collection)

Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	5.3
O2 (%)	14.7
PID (parts per million)	0

SSMP-20-03

Sample Collection Information

Location ID	SSMP-20-03
Sample ID	SSMP-20-03
Sample Location Description	See Figure 3
Is Duplicate associated with this Sample ID	No
Date	2020-12-09
Sample Media ID	SSMP-20-03(120920)
Flow Controller ID	10003418
Sample Collection Start Time	12:21
Starting Sampling Pressure (inches of Mercury)	-26
Middle Sample Collection Time	12:24
Middle Sampling Pressure (inches of Mercury)	-16
Middle Sampling Pressure (inches of Mercury)	-16
Ending Sampling Pressure (inches of Mercury)	-5
Sample Collection End Time	12:26
Notes	Bottle Vac #3586

Photos



Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	64
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0
Helium Test	Pass
Purge Method	Syringe
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length))	
Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No

Purged Soil Gas Parameters (completed after sample collection)

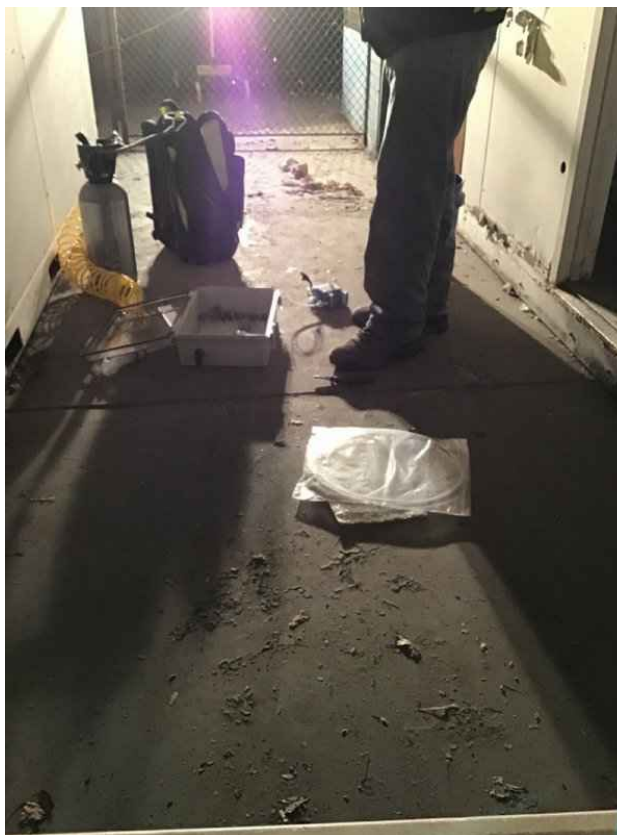
Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	4
O2 (%)	17
PID (parts per million)	0

SSMP-20-04

Sample Collection Information

Location ID	SSMP-20-04
Sample ID	SSMP-20-04
Sample Location Description	See Figure 3
Is Duplicate associated with this Sample ID	No
Date	2020-12-09
Sample Media ID	SSMP-20-04(120920)
Flow Controller ID	10000755
Sample Collection Start Time	13:10
Starting Sampling Pressure (inches of Mercury)	-26
Middle Sample Collection Time	13:13
Middle Sampling Pressure (inches of Mercury)	-16
Middle Sampling Pressure (inches of Mercury)	-16
Ending Sampling Pressure (inches of Mercury)	-5
Sample Collection End Time	13:15
Notes	Bottle Vac #3515

Photos



Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	70.5
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	

Helium Reading in Purged Vapor (%)	0
Helium Test	Pass
Purge Method	Syringe
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length))	
Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No

Purged Soil Gas Parameters (completed after sample collection)

Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	6.3
O2 (%)	15
PID (parts per million)	0

SVMP-20-01

Sample Collection Information

Location ID	SVMP-20-01
Sample ID	SVMP-20-01
Sample Location Description	Plant 6 entrance near off-site park
Is Duplicate associated with this Sample ID	No
Date	2020-12-09
Sample Media ID	SVMP-20-01(120920)
Flow Controller ID	10000787
Sample Collection Start Time	14:41
Starting Sampling Pressure (inches of Mercury)	-26
Middle Sample Collection Time	14:46
Middle Sampling Pressure (inches of Mercury)	-16
Middle Sampling Pressure (inches of Mercury)	-16
Ending Sampling Pressure (inches of Mercury)	-5
Sample Collection End Time	14:51
Notes	Bottle Vac #3050 (SVMP-20-01) and Bottle Vac #3482 (Dup-01). Splitter #10003814 used for simultaneous sample collection.

Photos



Leak/Tracer Test

Shut in Test	N/A
Pre-sample Purge Reading (parts per million)	0
Shroud Helium Concentration should be at least 40% (10% in CA)	
Shroud Helium Concentration (%)	59.8
Helium Reading in Purged Vapor should be <10% of shroud concentration (4% for a 40% shroud concentration)	
Helium Reading in Purged Vapor (%)	0
Helium Test	Pass
Purge Method	Syringe
Purge volume = $3 \times \pi \times \text{inner radius of tubing}^2 \times \text{length of tubing}$ (length of tubing depends on length of sample train, and depth of sample point (for SVMPS, for vapor pins, it only depends on sample train length)	
Purge Volume (milliliters)	200
Purge Rate (mL/min)	100
Purge Induced Vacuum	No

Purged Soil Gas Parameters (completed after sample collection)

Which parameter are going to be analyzed	CH4 (%), CH4 LEL (%), CO2, O2, PID
CH4 (%) (use carbon filter)	0
CH4 LEL (%) (use carbon filter)	0
CO2 (%)	2.1
O2 (%)	17.8
PID (parts per million)	0

2020-12-09, 09:53

Meteorological Data Date	2020-12-09
Time	09:53
Indoor Temperature (Degree F)	75
Outdoor Temperature (Degree F)	39
Relative Humidity (%)	76
Barometric Pressure (inches of Mercury)	30
Are you connected to the internet via data plan or WiFi?	Yes
Get weather data from National Weather Service Website for your current location?	N/A
<p>The weather source information is captured from NWS. The data in weather field is auto-populated based on your selection "are connected to wifi" = "yes". The data auto- populated comes in below format . Example below.: Temp is 23.6 degree F and Weather Condition is clear. The wind is blowing NE at 23 mph .</p>	
Weather	39.0 degrees F and Haze. The wind is blowing W at 37.0 mph.
General Notes or Observations	None

Attachment 2

Laboratory Data Reports



Thursday, February 27, 2020

Fibertec Project Number: 95063
Project Identification: RACER Lansing (30042872.00102) /30042872.00102
Submittal Date: 02/18/2020

Ms. Tiffany Linder
Arcadis U.S., Inc. - Novi
28550 Cabot Drive
Suite 500
Novi, MI 48377

Dear Ms. Linder,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

A handwritten signature in cursive script that reads "Stephanie Wallace".

By Stephanie Wallace at 11:18 AM, Feb 27, 2020

For Daryl P. Strandbergh
Laboratory Director

Enclosures

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Analytical Laboratory Report
Laboratory Project Number: 95063
Laboratory Sample Number: 95063-001

Order: 95063
 Page: 2 of 10
 Date: 02/27/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-1_02182020	Chain of Custody: 184590
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:23

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **95063-001** Matrix: **Air**
 Method: **EPA TO-15** Description: **SSMP-20-1_02182020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
2. Benzene	U		µg/m3	19	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
5. Bromoform	U		µg/m3	62	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
6. Bromomethane	U		µg/m3	23	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
12. Chloroethane	U		µg/m3	16	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
13. Chloroform	11		µg/m3	5.9	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
14. Chloromethane	U		µg/m3	12	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
20. Dichlorodifluoromethane	2800		µg/m3	30	19	02/25/20	VN20B25A	02/26/20	VN20B25A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
33. n-Heptane	U		µg/m3	49	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
35. n-Hexane	U		µg/m3	42	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 95063
Laboratory Sample Number: 95063-001

Order: 95063
 Page: 3 of 10
 Date: 02/27/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-1_02182020	Chain of Custody: 184590
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:23

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 95063-001 **Matrix: Air**
Description: SSMP-20-1_02182020

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
41. MTBE	U		µg/m3	22	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
43. Styrene	U		µg/m3	51	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
47. Toluene	U		µg/m3	23	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
51. Trichloroethene	U		µg/m3	1.6	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
59. o-Xylene	U		µg/m3	52	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 60. Xylenes	U		µg/m3	100	4.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM

Surrogate Summary

4-Bromofluorobenzene(S)	86	%	<u>Control Limits</u>	80-120	<u>Batch</u>	VN20B24A
4-Bromofluorobenzene(S)	84	%		80-120		VN20B25A

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Analytical Laboratory Report
Laboratory Project Number: 95063
Laboratory Sample Number: 95063-002

Order: 95063
 Page: 4 of 10
 Date: 02/27/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-2_02182020	Chain of Custody: 184590
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:34

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 95063-002 **Matrix: Air**
Description: SSMP-20-2_02182020

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	65		µg/m3	57	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
2. Benzene	U		µg/m3	19	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
5. Bromoform	U		µg/m3	62	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
6. Bromomethane	U		µg/m3	23	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
7. 1,3-Butadiene	U		µg/m3	1.2	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
8. 2-Butanone	U		µg/m3	35	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
11. Chlorobenzene	U		µg/m3	28	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
12. Chloroethane	U		µg/m3	16	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
13. Chloroform	U		µg/m3	5.9	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
14. Chloromethane	U		µg/m3	12	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
15. Cyclohexane	U		µg/m3	41	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	63	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
20. Dichlorodifluoromethane	4000		µg/m3	30	18	02/25/20	VN20B25A	02/26/20	VN20B25A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
23. 1,1-Dichloroethene	U		µg/m3	24	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
29. 1,4-Dioxane	U		µg/m3	22	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
31. Ethylbenzene	U		µg/m3	52	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
32. Ethylene Dibromide	U		µg/m3	1.7	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
33. n-Heptane	U		µg/m3	49	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.4	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
35. n-Hexane	U		µg/m3	42	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 37. Isopropanol	U		µg/m3	29	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 95063
Laboratory Sample Number: 95063-002

Order: 95063
 Page: 5 of 10
 Date: 02/27/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-2_02182020	Chain of Custody: 184590
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:34

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 95063-002 **Matrix: Air**
Description: SSMP-20-2_02182020

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
38. 4-Methyl-2-pentanone	U		µg/m3	49	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
39. Methylene Chloride	U		µg/m3	42	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	160	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
41. MTBE	U		µg/m3	22	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 42. Naphthalene	U		µg/m3	28	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
43. Styrene	U		µg/m3	51	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
45. Tetrachloroethene	U		µg/m3	41	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
47. Toluene	U		µg/m3	23	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	140	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
51. Trichloroethene	U		µg/m3	1.6	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
56. Vinyl Acetate	U		µg/m3	42	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
57. Vinyl Chloride	U		µg/m3	15	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
58. m&p-Xylene	U		µg/m3	52	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
59. o-Xylene	U		µg/m3	95	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM
‡ 60. Xylenes	U		µg/m3	110	8.0	02/24/20	VN20B24A	02/24/20	VN20B24A	JLM

Surrogate Summary

4-Bromofluorobenzene(S)	86	%	<u>Control Limits</u>	<u>Batch</u>
4-Bromofluorobenzene(S)	85	%	80-120	VN20B24A
			80-120	VN20B25A

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Analytical Laboratory Report
Laboratory Project Number: 95063
Laboratory Sample Number: 95063-003

Order: 95063
 Page: 6 of 10
 Date: 02/27/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-3_02182020	Chain of Custody: 184590
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:38

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 95063-003 **Matrix: Air**
Description: SSMP-20-3_02182020

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
2. Benzene	U		µg/m3	19	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
5. Bromoform	U		µg/m3	62	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
6. Bromomethane	U		µg/m3	23	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
12. Chloroethane	U		µg/m3	16	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
14. Chloromethane	U		µg/m3	12	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
20. Dichlorodifluoromethane	2000		µg/m3	30	10	02/25/20	VN20B25A	02/25/20	VN20B25A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
33. n-Heptane	U		µg/m3	49	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
35. n-Hexane	U		µg/m3	42	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 95063
Laboratory Sample Number: 95063-003

Order: 95063
 Page: 7 of 10
 Date: 02/27/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-3_02182020	Chain of Custody: 184590
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:38

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **95063-003** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-3_02182020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
41. MTBE	U		µg/m3	22	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
43. Styrene	U		µg/m3	51	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
47. Toluene	U		µg/m3	23	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
51. Trichloroethene	2.3		µg/m3	1.6	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
59. o-Xylene	U		µg/m3	52	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 60. Xylenes	U		µg/m3	100	4.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM

Surrogate Summary			Control Limits	Batch
4-Bromofluorobenzene(S)	87	%	80-120	VN20B24A
4-Bromofluorobenzene(S)	85	%	80-120	VN20B25A

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Analytical Laboratory Report
Laboratory Project Number: 95063
Laboratory Sample Number: 95063-004

Order: 95063
Page: 8 of 10
Date: 02/27/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-4_02182020	Chain of Custody: 184590
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:15

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **95063-004** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-4_02182020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	67		µg/m3	57	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
2. Benzene	U		µg/m3	19	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
5. Bromoform	U		µg/m3	62	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
6. Bromomethane	U		µg/m3	23	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
7. 1,3-Butadiene	U		µg/m3	1.2	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
8. 2-Butanone	U		µg/m3	35	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
11. Chlorobenzene	U		µg/m3	28	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
12. Chloroethane	U		µg/m3	16	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
13. Chloroform	U		µg/m3	5.9	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
14. Chloromethane	U		µg/m3	12	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
15. Cyclohexane	U		µg/m3	41	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	63	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
20. Dichlorodifluoromethane	3600		µg/m3	30	14	02/25/20	VN20B25A	02/25/20	VN20B25A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
23. 1,1-Dichloroethene	U		µg/m3	24	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
29. 1,4-Dioxane	U		µg/m3	22	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
31. Ethylbenzene	U		µg/m3	52	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
32. Ethylene Dibromide	U		µg/m3	1.7	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
33. n-Heptane	U		µg/m3	49	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.4	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
35. n-Hexane	U		µg/m3	42	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 37. Isopropanol	U		µg/m3	29	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 95063
Laboratory Sample Number: 95063-004

Order: 95063
 Page: 9 of 10
 Date: 02/27/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-4_02182020	Chain of Custody: 184590
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:15

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **95063-004** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-4_02182020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
38. 4-Methyl-2-pentanone	U		µg/m3	49	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
39. Methylene Chloride	U		µg/m3	42	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	160	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
41. MTBE	U		µg/m3	22	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 42. Naphthalene	U		µg/m3	28	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
43. Styrene	U		µg/m3	51	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
45. Tetrachloroethene	U		µg/m3	41	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
47. Toluene	U		µg/m3	23	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	140	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
51. Trichloroethene	U		µg/m3	1.6	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
56. Vinyl Acetate	U		µg/m3	42	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
57. Vinyl Chloride	U		µg/m3	15	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
58. m&p-Xylene	U		µg/m3	52	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
59. o-Xylene	U		µg/m3	95	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM
‡ 60. Xylenes	U		µg/m3	110	8.0	02/24/20	VN20B24A	02/25/20	VN20B24A	JLM

Surrogate Summary

4-Bromofluorobenzene(S)	86	%	<u>Control Limits</u>	<u>Batch</u>
4-Bromofluorobenzene(S)	84	%	80-120	VN20B24A
			80-120	VN20B25A

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Definitions/ Qualifiers:

- A:** Spike recovery or precision unusable due to dilution.
- B:** The analyte was detected in the associated method blank.
- E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J:** The concentration is an estimated value.
- M:** Modified Method
- U:** The analyte was not detected at or above the reporting limit.
- X:** Matrix Interference has resulted in a raised reporting limit or distorted result.
- W:** Results reported on a wet-weight basis.
- ***: Value reported is outside QC limits
- D:** The sample or extract was analyzed at a DF greater than 1.

Exception Summary:

Analysis Locations:

All analyses performed in Holt.



Accreditation Number(s):

T104704518-19-8 (TX)

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VN20B24A: Method Blank (MB)

EPA TO-15

Run Time: VN20B24A.MB 02/24/2020 13:34 [VN20B24A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Acetone	U		57
Benzene	U		19
Benzyl Chloride	U		6.2
Bromodichloromethane	U		8.0
Bromoform	U		62
Bromomethane	U		23
1,3-Butadiene	U		0.66
2-Butanone	U		35
Carbon Disulfide	U		37
Carbon Tetrachloride	U		7.5
Chlorobenzene	U		28
Chloroethane	U		16
Chloroform	U		5.9
Chloromethane	U		12
Cyclohexane	U		41
Dibromochloromethane	U		4.1
1,2-Dichlorobenzene	U		36
1,3-Dichlorobenzene	U		36
1,4-Dichlorobenzene	U		36
1,1-Dichloroethane	U		24
1,2-Dichloroethane	U		4.9
1,1-Dichloroethene	U		24
cis-1,2-Dichloroethene	U		24
trans-1,2-Dichloroethene	U		24
1,2-Dichloropropane	U		28
cis-1,3-Dichloropropene	U		27
trans-1,3-Dichloropropene	U		27
1,4-Dioxane	U		22
Ethyl Acetate	U		43
Ethylbenzene	U		52
Ethylene Dibromide	U		0.92
n-Heptane	U		49
Hexachlorobutadiene	U		5.1

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VN20B24A: Method Blank (MB)

EPA TO-15

Run Time: VN20B24A.MB 02/24/2020 13:34 [VN20B24A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
n-Hexane	U		42
2-Hexanone	U		49
Isopropanol	U		29
4-Methyl-2-pentanone	U		49
Methylene Chloride	U		42
2-Methylnaphthalene	U		140
MTBE	U		22
Naphthalene	U		28
Styrene	U		51
1,1,2,2-Tetrachloroethane	U		3.3
Tetrachloroethene	U		41
Tetrahydrofuran	U		3.5
Toluene	U		23
1,2,4-Trichlorobenzene	U		89
1,1,1-Trichloroethane	U		33
1,1,2-Trichloroethane	U		6.5
Trichloroethene	U		1.6
Trichlorofluoromethane	U		34
1,1,2-Trichlorotrifluoroethane	U		46
1,2,4-Trimethylbenzene	U		29
1,3,5-Trimethylbenzene	U		29
Vinyl Acetate	U		42
Vinyl Chloride	U		15
m&p-Xylene	U		52
o-Xylene	U		52
4-Bromofluorobenzene(S)	86		80-120

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VN20B24A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VN20B24A.LCS: 02/24/2020 10:47 [VN20B24A] VN20B24A.LCSD: 02/24/2020 11:41 [VN20B24A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Acetone	25.8	24.3	94	70-130		25.8	24.7	96		2	20	
Benzene	37.6	32.8	87	70-130		37.6	33.0	88		1	20	
Benzyl Chloride	37.5	34.2	91	70-150		37.5	33.9	90		1	20	
Bromodichloromethane	77.3	66.6	86	70-130		77.3	66.5	86		0	20	
Bromoform	117	112	95	70-138		117	111	95		0	20	
Bromomethane	43.4	38.5	89	70-133		43.4	38.3	88		1	20	
1,3-Butadiene	26.1	25.8	99	70-134		26.1	25.5	98		1	20	
2-Butanone	32.6	33.6	103	70-130		32.6	34.0	104		1	20	
Carbon Disulfide	35.7	33.4	94	70-130		35.7	33.5	94		0	20	
Carbon Tetrachloride	71.8	61.8	86	70-131		71.8	61.9	86		0	20	
Chlorobenzene	54.0	48.7	90	70-130		54.0	48.9	91		1	20	
Chloroethane	29.6	31.7	107	70-130		29.6	31.2	105		2	20	
Chloroform	55.0	49.8	91	70-130		55.0	49.8	91		0	20	
Chloromethane	23.5	22.1	94	70-130		23.5	22.0	93		1	20	
Cyclohexane	40.6	41.1	101	70-130		40.6	41.4	102		1	20	
Dibromochloromethane	95.8	86.4	90	70-135		95.8	86.6	90		0	20	
1,2-Dichlorobenzene	66.8	63.7	95	70-130		66.8	62.8	94		1	20	
1,3-Dichlorobenzene	66.3	65.8	99	70-131		66.3	65.2	98		1	20	
1,4-Dichlorobenzene	66.5	67.8	102	70-134		66.5	67.1	101		1	20	
1,1-Dichloroethane	47.8	43.5	91	70-130		47.8	43.3	91		0	20	
1,2-Dichloroethane	47.8	45.0	94	70-130		47.8	44.7	93		1	20	
1,1-Dichloroethene	48.1	47.4	99	70-133		48.1	47.1	98		1	20	
cis-1,2-Dichloroethene	47.4	46.6	98	70-130		47.4	46.7	99		1	20	
trans-1,2-Dichloroethene	47.4	46.1	97	70-130		47.4	46.2	97		0	20	
1,2-Dichloropropane	54.4	48.4	89	70-130		54.4	48.5	89		0	20	
cis-1,3-Dichloropropene	53.2	56.5	106	70-131		53.2	57.0	107		1	20	
trans-1,3-Dichloropropene	46.3	45.5	98	70-134		46.3	45.8	99		1	20	
1,4-Dioxane	39.4	37.8	96	70-130		39.4	38.0	97		1	20	
Ethyl Acetate	31.8	31.9	100	70-130		31.8	32.2	101		1	20	
Ethylbenzene	50.8	51.6	101	70-130		50.8	51.8	102		1	20	
Ethylene Dibromide	90.1	86.6	96	70-130		90.1	86.5	96		0	20	
n-Heptane	48.3	48.6	101	70-132		48.3	48.6	101		0	20	
Hexachlorobutadiene	109	99.6	91	70-134		109	96.9	89		2	20	

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VN20B24A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VN20B24A.LCS: 02/24/2020 10:47 [VN20B24A] VN20B24A.LCSD: 02/24/2020 11:41 [VN20B24A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
n-Hexane	41.9	41.8	100	70-130		41.9	41.5	99		1	20	
2-Hexanone	39.6	40.3	102	70-139		39.6	40.7	103		1	20	
Isopropanol	27.8	27.4	99	54-144		27.8	27.3	98		1	20	
4-Methyl-2-pentanone	41.3	41.3	100	70-130		41.3	41.2	100		0	20	
Methylene Chloride	41.0	36.8	90	70-132		41.0	37.0	90		0	20	
2-Methylnaphthalene	37.7	32.3	86	70-146		37.7	30.2	80		7	20	
MTBE	44.3	53.0	119	70-130		44.3	53.2	120		1	20	
Naphthalene	52.8	62.4	118	70-148		52.8	60.8	115		3	20	
Styrene	49.6	51.7	104	70-130		49.6	51.7	104		0	20	
1,1,2,2-Tetrachloroethane	80.2	76.5	95	70-130		80.2	76.1	95		0	20	
Tetrachloroethene	79.7	71.7	90	70-130		79.7	71.3	89		1	20	
Tetrahydrofuran	34.5	39.1	113	70-138		34.5	39.1	113		0	20	
Toluene	44.6	42.9	96	70-130		44.6	43.2	97		1	20	
1,2,4-Trichlorobenzene	75.0	68.1	91	70-140		75.0	65.8	88		3	20	
1,1,1-Trichloroethane	63.6	55.1	87	70-130		63.6	55.2	87		0	20	
1,1,2-Trichloroethane	63.9	58.7	92	70-130		63.9	58.8	92		0	20	
Trichloroethene	62.4	60.6	97	70-130		62.4	60.9	98		1	20	
Trichlorofluoromethane	66.9	59.7	89	70-132		66.9	59.7	89		0	20	
1,1,2-Trichlorotrifluoroethane	92.1	83.7	91	70-130		92.1	83.8	91		0	20	
1,2,4-Trimethylbenzene	55.0	56.6	103	70-132		55.0	56.2	102		1	20	
1,3,5-Trimethylbenzene	55.2	55.1	100	70-131		55.2	55.0	100		0	20	
Vinyl Acetate	33.1	34.4	104	70-131		33.1	34.8	105		1	20	
Vinyl Chloride	29.6	26.4	89	70-131		29.6	26.6	90		1	20	
m&p-Xylene	104	98.5	95	70-130		104	98.6	95		0	20	
o-Xylene	50.6	48.7	96	70-130		50.6	49.0	97		1	20	
4-Bromofluorobenzene(S)			97	80-120				97				

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VN20B25A: Method Blank (MB)

EPA TO-15

Run Time: VN20B25A.MB 02/25/2020 13:22 [VN20B25A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Dichlorodifluoromethane	U		30
4-Bromofluorobenzene(S)	84		80-120

VN20B25A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VN20B25A.LCS: 02/25/2020 10:34 [VN20B25A] VN20B25A.LCSD: 02/25/2020 11:29 [VN20B25A]

Analyte	LCS Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier	LCSD Spike Amount	LCSD Result	LCSD Rec.	LCSD Qualifier	RPD	RPD Limits	RPD Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%	%	
Dichlorodifluoromethane	56.8	54.2	95	70-132		56.8	54.1	95		0	20	
4-Bromofluorobenzene(S)			96	80-120				96				


Definitions/ Qualifiers:

U: The analyte was not detected at or above the Reporting Limit (RL).
***:** Value reported is outside QC limits

Exception Summary:

Exceptions have been properly noted on reported results or affected samples have been scheduled for reanalysis when appropriate.

Report Generated By:



By Stephanie Wallace at 11:23 AM, Feb 27, 2020

Client Name: <i>Arcadis of Michigan, LLC</i>			PARAMETERS										Matrix Code			Deliverables						
Contact Person: <i>Tiffany Linder</i>			MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	<i>T0-15</i>	<i>T0-13A</i>	<i>aw 2/13/20</i>									HOLD SAMPLE	S Soil	GW	Ground Water		Level 2	
A Air	SW	Surface Water																Level 3				
O Oil	WW	Waste Water																Level 4				
P Wipe	X	Other: Specify																EDD				
Remarks:																						
Project Name/ Number: <i>RACER Lansing / 30042872.00102</i>																						
Email distribution list: <i>Tiffany.Linder@arcadis.com</i> <i>Patrick.Curry@arcadis.com</i>																						
Quote#																						
Purchase Order# <i>30042872.00102</i>																						
Date	Time	Sample #	Client Sample Descriptor																			
<i>2/18/20</i>	<i>1123</i>		<i>SSMP-20-1_02182020</i>		<i>A</i>	<i>1</i>	<i>X</i>															
<i>2/18/20</i>	<i>1234</i>		<i>SSMP-20-2_02182020</i>		<i>A</i>	<i>1</i>	<i>X</i>															
<i>2/18/20</i>	<i>1338</i>		<i>SSMP-20-3_02182020</i>		<i>A</i>	<i>1</i>	<i>X</i>															
<i>2/18/20</i>	<i>1415</i>		<i>SSMP-20-4_02182020</i>		<i>A</i>	<i>1</i>	<i>X</i>															
<p>Received By Lab</p> <p>FEB 18 2020</p> <p>Initials: <i>JJ</i></p>																						
Comments:																						
Sampled/Relinquished By: <i>Austin Westhuis / Arcadis</i>					Date/ Time <i>2/18/20 1452</i>					Received By: <i>M Weaver / Melissa Weaver / Arcadis 1452</i>												
Relinquished By: <i>M Weaver / Melissa Weaver / Arcadis</i>					Date/ Time <i>2/18/20 1545</i>					Received By: <i>Paul Allen</i>												
Relinquished By:					Date/ Time:					Received By Laboratory:												
<p>Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY</p> <p>___ 1 bus. day ___ 2 bus. days ___ 3 bus. days ___ 4 bus. days</p> <p><input checked="" type="checkbox"/> 5-7 bus. days (standard) Other (specify time/date requirement): _____</p>															<p>LAB USE ONLY</p> <p>Fibertec project number: <i>95063</i></p> <p>Temperature upon receipt at Lab: <i>Air Room Temp.</i></p>							
Please see back for terms and conditions																						



Tuesday, February 25, 2020

Fibertec Project Number: 95064
Project Identification: RACER Lansing (30042872.00102) /30042872.00102
Submittal Date: 02/18/2020

Ms. Tiffany Linder
Arcadis U.S., Inc. - Novi
28550 Cabot Drive
Suite 500
Novi, MI 48377

Dear Ms. Linder,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

By Rikki Lott at 10:33 AM, Feb 25, 2020

For Daryl P. Strandbergh
Laboratory Director

Enclosures

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Analytical Laboratory Report
Laboratory Project Number: 95064
Laboratory Sample Number: 95064-001

Order: 95064
Page: 2 of 7
Date: 02/25/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: Field Blank	Chain of Custody: 173478
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:15

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 95064-001 **Matrix: Air**
Description: Field Blank

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	2.5	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP

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Analytical Laboratory Report
Laboratory Project Number: 95064
Laboratory Sample Number: 95064-002

Order: 95064
 Page: 3 of 7
 Date: 02/25/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-1_02182020	Chain of Custody: 173478
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:04

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 95064-002 Matrix: Air
Description: SSMP-20-1_02182020

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	2.5	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/20/20	SG20B20A	GJP

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Analytical Laboratory Report
Laboratory Project Number: 95064
Laboratory Sample Number: 95064-003

Order: 95064
 Page: 4 of 7
 Date: 02/25/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-2_02182020	Chain of Custody: 173478
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:45

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 95064-003 Matrix: Air
Description: SSMP-20-2_02182020

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	2.5	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP

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Analytical Laboratory Report
Laboratory Project Number: 95064
Laboratory Sample Number: 95064-004

Order: 95064
 Page: 5 of 7
 Date: 02/25/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-3_02182020	Chain of Custody: 173478
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:51

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 95064-004 Matrix: Air
Description: SSMP-20-3_02182020

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	2.5	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP

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Analytical Laboratory Report
Laboratory Project Number: 95064
Laboratory Sample Number: 95064-005

Order: 95064
 Page: 6 of 7
 Date: 02/25/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-4_02182020	Chain of Custody: 173478
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 02/18/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:26

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 95064-005 Matrix: Air
Description: SSMP-20-4_02182020

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	2.5	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	02/19/20	PS20B19G	02/21/20	SG20B20A	GJP

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Definitions/ Qualifiers:

- A:** Spike recovery or precision unusable due to dilution.
- B:** The analyte was detected in the associated method blank.
- E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J:** The concentration is an estimated value.
- M:** Modified Method
- U:** The analyte was not detected at or above the reporting limit.
- X:** Matrix Interference has resulted in a raised reporting limit or distorted result.
- W:** Results reported on a wet-weight basis.
- *:** Value reported is outside QC limits

Exception Summary:

Analysis Locations:

All analyses performed in Holt.



Accreditation Number(s):

T104704518-19-8 (TX)

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PS20B19G: Method Blank (MB)

EPA TO-13A (Modified)

Run Time: PS20B19G.MB 02/19/2020 19:43 [SG20B19A]

Analyte	MB Result µg/m3	MB Qualifier	MB RDL µg/m3
Acenaphthene (SIM)	U		5.0
Acenaphthylene (SIM)	U		5.0
Anthracene (SIM)	U		5.0
Benzo(a)anthracene (SIM)	U		1.0
Benzo(a)pyrene (SIM)	U		1.0
Benzo(b)fluoranthene (SIM)	U		1.0
Benzo(ghi)perylene (SIM)	U		1.0
Benzo(k)fluoranthene (SIM)	U		1.0
Chrysene (SIM)	U		1.0
Dibenzo(a,h)anthracene (SIM)	U		2.0
Fluoranthene (SIM)	U		1.0
Fluorene (SIM)	U		5.0
Indeno(1,2,3-cd)pyrene (SIM)	U		2.0
2-Methylnaphthalene (SIM)	U		5.0
Naphthalene (SIM)	U		5.0
Phenanthrene (SIM)	U		2.0
Pyrene (SIM)	U		5.0
2-Fluorobiphenyl(S)	95		70-130
1-Fluoronaphthalene(S)	90		70-130
4-Terphenyl-d14(S)	98		70-130

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PS20B19G: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-13A (Modified)

Run Time: PS20B19G.LCS: 02/19/2020 20:23 [SG20B19A] PS20B19G.LCSD: 02/19/2020 21:04 [SG20B19A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Acenaphthene (SIM)	0.0200	0.0189	94	70-130		0.0200	0.0168	84		11	30	
Acenaphthylene (SIM)	0.0200	0.0180	90	70-130		0.0200	0.0160	80		12	30	
Anthracene (SIM)	0.0200	0.0156	78	70-130		0.0200	0.0143	71		9	30	
Benzo(a)anthracene (SIM)	0.0200	0.0165	83	70-130		0.0200	0.0157	79		5	30	
Benzo(a)pyrene (SIM)	0.0200	0.0161	81	70-130		0.0200	0.0144	72		12	30	
Benzo(b)fluoranthene (SIM)	0.0200	0.0167	83	70-130		0.0200	0.0147	73		13	30	
Benzo(ghi)perylene (SIM)	0.0200	0.0193	97	70-130		0.0200	0.0157	78		22	30	
Benzo(k)fluoranthene (SIM)	0.0200	0.0168	84	70-130		0.0200	0.0160	80		5	30	
Chrysene (SIM)	0.0200	0.0197	99	70-130		0.0200	0.0184	92		7	30	
Dibenzo(a,h)anthracene (SIM)	0.0200	0.0150	75	70-130		0.0200	0.0164	82		9	30	
Fluoranthene (SIM)	0.0200	0.0151	76	70-130		0.0200	0.0145	73		4	30	
Fluorene (SIM)	0.0200	0.0158	79	70-130		0.0200	0.0154	77		3	30	
Indeno(1,2,3-cd)pyrene (SIM)	0.0200	0.0168	84	70-130		0.0200	0.0145	73		14	30	
2-Methylnaphthalene (SIM)	0.0200	0.0168	84	70-130		0.0200	0.0143	72		15	30	
Naphthalene (SIM)	0.0200	0.0161	80	70-130		0.0200	0.0141	71		12	30	
Phenanthrene (SIM)	0.0200	0.0167	84	70-130		0.0200	0.0148	74		13	30	
Pyrene (SIM)	0.0200	0.0209	105	70-130		0.0200	0.0186	93		12	30	
2-Fluorobiphenyl(S)			87	70-130				83				
1-Fluoronaphthalene(S)			87	70-130				85				
4-Terphenyl-d14(S)			93	70-130				85				

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F: (231) 775-8584

Definitions/ Qualifiers:

U: The analyte was not detected at or above the Reporting Limit (RL).
*****: Value reported is outside QC limits

Exception Summary:

Exceptions have been properly noted on reported results or affected samples have been scheduled for reanalysis when appropriate.

Report Generated By:



By Rikki Lott at 10:39 AM, Feb 25, 2020



Analytical Laboratory

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Industrial Hygiene Services, Inc.
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email: asbestos@fibertechs.com

Geoprobe
11766 E. Grand River Rd.
Brighton, MI 48116
Phone: 810 220 3300
Fax: 810 220 3311

Chain of Custody #
173478
PAGE 1 of 1

Client Name: <u>Arcadis of Michigan, LLC</u>			MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	<u>70-13A</u>	PARAMETERS										Matrix Code		Deliverables	
Contact Person: <u>Tiffany Linder</u>						HOLD SAMPLE	S	Soil	GW	Ground Water	Level 2								
Project Name/Number: <u>RACER Lansing / 30042872.00102</u>							A	Air	SW	Surface Water	Level 3								
Email distribution list: <u>Tiffany.Linder@arcadis.com</u> <u>Patrick.Cumy@arcadis.com</u>							O	Oil	WW	Waste Water	Level 4								
Quote#							P	Wipe	X	Other: Specify	EDD								
Purchase Order# <u>30042872.00102</u>							Remarks:												
Date	Time	Sample #	Client Sample Descriptor																
<u>2/18/20</u>	<u>1115</u>		<u>Field Blank</u>	<u>A</u>	<u>1</u>	<u>X</u>													
<u>2/18/20</u>	<u>1204</u>		<u>SSMP-20-1-02182020</u>	<u>A</u>	<u>1</u>	<u>X</u>													
<u>2/18/20</u>	<u>1245</u>		<u>SSMP-20-2-02182020</u>	<u>A</u>	<u>1</u>	<u>X</u>													
<u>2/18/20</u>	<u>1351</u>		<u>SSMP-20-3-02182020</u>	<u>A</u>	<u>1</u>	<u>X</u>													
<u>2/18/20</u>	<u>1426</u>		<u>SSMP-20-4-02182020</u>	<u>A</u>	<u>1</u>	<u>X</u>													
Received By Lab																			
FEB 18 2020																			
Initials: <u>JS</u>																			
Comments:																			
Sampled/Relinquished By: <u>Paul W. L. Austin Westhuis / Arcadis</u>				Date/Time <u>2/18/20 1452</u>		Received By: <u>M Weaver / Melissa Weaver / Arcadis 1452</u>													
Relinquished By: <u>M Weaver / Melissa Weaver / Arcadis</u>				Date/Time <u>2/18/20 1545</u>		Received By: <u>[Signature]</u>													
Relinquished By:				Date/Time		Received By Laboratory:													
<p>Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY</p> <p>___ 1 bus. day ___ 2 bus. days ___ 3 bus. days ___ 4 bus. days</p> <p><u>X</u> 5-7 bus. days (standard) Other (specify time/date requirement): _____</p>												<p>LAB USE ONLY</p> <p>Fibertec project number: <u>95064</u></p> <p>Temperature upon receipt at Lab: <u>4.6°C</u></p>							
Please see back for terms and conditions																			

Received On Ice

Fibertec Environmental Services

Vapor Tube Sampling Field Worksheet

Client name: Arcadis of Michigan, LLC Contact Person: Tiffany Linder - 810-225-1928
 Project Name / Number: RACER Lansing / 30042872.00102 Sampled By: Austin Westhuis

Sample Identifiers		Field Calibration				Sampling			
Sample Descriptor	Pump #	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
Field Blank <small>(Open ends, and then cap.)</small>	Pump # LASK-2 NA	TO-13A <small>(PNA)</small>	--	--	--	--	--	--	2/18/20
	Rotameter # 3 NA								
Sample Descriptor	Pump # LASK-2	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
Field Matrix Spike <small>(Carry to sample site, then return.)</small>	Pump # LASK-2 NA	TO-13A	--	--	--	--	--	--	2/18/20
	Rotameter # 3 NA								
Sample Descriptor	Pump # LASK-2	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
SSMP-20-1-02182020	Rotameter # 3	TO-13A	0.2 L/min	0.2 L/min	0.2 L/min	12:04	12:14	10 min	2/18/20
Sample Descriptor	Pump # LASK-2	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
SSMP-20-2-02182020	Rotameter # 3	TO-13A	0.2 L/min	0.2 L/min	0.2 L/min	12:45	12:55	10 min	2/18/20
Sample Descriptor	Pump # LASK-2	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
SSMP-20-3-02182020	Rotameter # 3	TO-13A	0.2 L/min	0.2 L/min	0.2 L/min	13:51	14:01	10 min	2/18/20
Sample Descriptor	Pump # LASK-2	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
SSMP-20-4-02182020	Rotameter # 3	TO-13A	0.2 L/min	0.2 L/min	0.2 L/min	14:26	14:36	10 min	2/18/20
Sample Descriptor	Pump #	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
	Rotameter #		L/min	L/min	L/min	:	:	min	
Sample Descriptor	Pump #	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
	Rotameter #		L/min	L/min	L/min	:	:	min	
Sample Descriptor	Pump #	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
	Rotameter #		L/min	L/min	L/min	:	:	min	
Sample Descriptor	Pump #	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Start Time	End Time	Total Time	Date
	Rotameter #		L/min	L/min	L/min	:	:	min	

Comments:



Wednesday, August 19, 2020

Fibertec Project Number: 96616 Amended
Project Identification: RACER Lansing (30042872.00102) /30042872.00102
Submittal Date: 06/17/2020

Ms. Tiffany Linder
Arcadis U.S., Inc. - Novi
28550 Cabot Drive
Suite 500
Novi, MI 48377

Dear Ms. Linder,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

This report has been amended to include the full list PNA analysis on samples -001 through -004 and replaces the report issued on June 26, 2020.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

By Anthony Donnelly at 5:35 PM, Aug 19, 2020

For Daryl P. Strandbergh
Laboratory Director

Enclosures

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-001

Order: 96616
 Page: 2 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 1	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:37

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 96616-001A **Matrix: Air**
Description: SSMP-20-01 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 2. Acenaphthylene (SIM)	U	L-	µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U	L-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U	F-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U	F-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U	F-	µg/m3	2.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U	L-	µg/m3	2.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 96616-001 **Matrix: Air**
Description: SSMP-20-01 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
2. Benzene	U		µg/m3	19	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
3. Benzyl Chloride	U		µg/m3	6.2	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
4. Bromodichloromethane	U		µg/m3	8.0	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
5. Bromoform	U		µg/m3	62	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
6. Bromomethane	U		µg/m3	23	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
7. 1,3-Butadiene	U		µg/m3	2.3	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
8. 2-Butanone	U		µg/m3	35	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
‡ 9. Carbon Disulfide	U		µg/m3	47	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
10. Carbon Tetrachloride	U		µg/m3	7.5	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
11. Chlorobenzene	U		µg/m3	28	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
12. Chloroethane	U		µg/m3	16	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
13. Chloroform	58		µg/m3	5.9	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
14. Chloromethane	U		µg/m3	12	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-001

Order: 96616
 Page: 3 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 1	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:37

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **96616-001** Matrix: **Air**
 Method: **EPA TO-15** Description: **SSMP-20-01 (061720)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
15. Cyclohexane	U		µg/m3	41	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
16. Dibromochloromethane	U		µg/m3	7.7	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
17. 1,2-Dichlorobenzene	U		µg/m3	36	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
18. 1,3-Dichlorobenzene	U		µg/m3	36	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
19. 1,4-Dichlorobenzene	U		µg/m3	36	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
20. Dichlorodifluoromethane	4500		µg/m3	30	19	06/23/20	VN20F23A	06/24/20	VN20F23A	KCM
21. 1,1-Dichloroethane	U		µg/m3	24	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
22. 1,2-Dichloroethane	U		µg/m3	4.9	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
23. 1,1-Dichloroethene	U		µg/m3	24	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
24. cis-1,2-Dichloroethene	U		µg/m3	24	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
25. trans-1,2-Dichloroethene	U		µg/m3	24	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
26. 1,2-Dichloropropane	U		µg/m3	28	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
27. cis-1,3-Dichloropropene	U		µg/m3	27	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
28. trans-1,3-Dichloropropene	U		µg/m3	27	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
29. 1,4-Dioxane	U		µg/m3	22	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
‡ 30. Ethyl Acetate	U		µg/m3	43	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
31. Ethylbenzene	U		µg/m3	52	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
32. Ethylene Dibromide	U		µg/m3	3.2	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
33. n-Heptane	U		µg/m3	49	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
34. Hexachlorobutadiene	U		µg/m3	10	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
35. n-Hexane	U		µg/m3	42	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
‡ 36. 2-Hexanone	U		µg/m3	49	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
‡ 37. Isopropanol	U		µg/m3	29	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
38. 4-Methyl-2-pentanone	U		µg/m3	49	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
39. Methylene Chloride	U		µg/m3	52	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
41. MTBE	U		µg/m3	22	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
‡ 42. Naphthalene	U		µg/m3	28	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
43. Styrene	U		µg/m3	51	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
45. Tetrachloroethene	70		µg/m3	41	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
47. Toluene	U		µg/m3	23	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
49. 1,1,1-Trichloroethane	U		µg/m3	33	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
51. Trichloroethene	U		µg/m3	2.2	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-001

Order: 96616
 Page: 4 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 1	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:37

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 96616-001 **Matrix: Air**
Description: SSMP-20-01 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
52. Trichlorofluoromethane	U		µg/m3	34	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
56. Vinyl Acetate	U		µg/m3	42	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
57. Vinyl Chloride	U		µg/m3	15	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
58. m&p-Xylene	U		µg/m3	52	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
59. o-Xylene	U		µg/m3	52	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM
‡ 60. Xylenes	U		µg/m3	100	15	06/22/20	VK20F22A	06/23/20	VK20F22A	KCM

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-002

Order: 96616
 Page: 5 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 2	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:16

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 96616-002A Matrix: Air
Description: SSMP-20-02 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 2. Acenaphthylene (SIM)	U	L-	µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U	L-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U	F-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U	F-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U	F-	µg/m3	2.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U	L-	µg/m3	2.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/20/20	SG20F19A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 96616-002 Matrix: Air
Description: SSMP-20-02 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	770	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
2. Benzene	U		µg/m3	96	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
3. Benzyl Chloride	U	V+	µg/m3	33	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
4. Bromodichloromethane	U		µg/m3	19	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
5. Bromoform	U		µg/m3	69	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
6. Bromomethane	U		µg/m3	43	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
7. 1,3-Butadiene	U	V+	µg/m3	16	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
8. 2-Butanone	U		µg/m3	240	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 9. Carbon Disulfide	U		µg/m3	260	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
10. Carbon Tetrachloride	U		µg/m3	18	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
11. Chlorobenzene	U		µg/m3	32	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
12. Chloroethane	U		µg/m3	73	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
13. Chloroform	U		µg/m3	14	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
14. Chloromethane	U	V+	µg/m3	110	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-002

Order: 96616
 Page: 6 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 2	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:16

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **96616-002** Matrix: **Air**
 Method: **EPA TO-15** Description: **SSMP-20-02 (061720)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
15. Cyclohexane	U		µg/m3	41	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
16. Dibromochloromethane	U		µg/m3	24	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
17. 1,2-Dichlorobenzene	U		µg/m3	850	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
18. 1,3-Dichlorobenzene	U		µg/m3	170	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
19. 1,4-Dichlorobenzene	U		µg/m3	170	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
20. Dichlorodifluoromethane	9000		µg/m3	56	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
21. 1,1-Dichloroethane	U		µg/m3	30	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
22. 1,2-Dichloroethane	U		µg/m3	12	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
23. 1,1-Dichloroethene	U		µg/m3	30	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
24. cis-1,2-Dichloroethene	U		µg/m3	29	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
25. trans-1,2-Dichloroethene	U		µg/m3	29	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
26. 1,2-Dichloropropane	U		µg/m3	34	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
27. cis-1,3-Dichloropropene	U		µg/m3	34	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
28. trans-1,3-Dichloropropene	U		µg/m3	47	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
29. 1,4-Dioxane	U		µg/m3	99	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 30. Ethyl Acetate	U		µg/m3	90	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
31. Ethylbenzene	U		µg/m3	130	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
32. Ethylene Dibromide	U		µg/m3	23	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
33. n-Heptane	U		µg/m3	120	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
34. Hexachlorobutadiene	U		µg/m3	72	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
35. n-Hexane	U		µg/m3	110	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 36. 2-Hexanone	U		µg/m3	270	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 37. Isopropanol	U		µg/m3	200	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
38. 4-Methyl-2-pentanone	U		µg/m3	300	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
39. Methylene Chloride	U		µg/m3	190	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 40. 2-Methylnaphthalene	U		µg/m3	2200	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
41. MTBE	U		µg/m3	110	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 42. Naphthalene	U		µg/m3	140	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
43. Styrene	U		µg/m3	310	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	21	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
45. Tetrachloroethene	U		µg/m3	50	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 46. Tetrahydrofuran	U		µg/m3	34	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
47. Toluene	U		µg/m3	81	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
48. 1,2,4-Trichlorobenzene	U		µg/m3	1900	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
49. 1,1,1-Trichloroethane	U		µg/m3	33	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
50. 1,1,2-Trichloroethane	U		µg/m3	40	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
51. Trichloroethene	U		µg/m3	16	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-002

Order: 96616
 Page: 7 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 2	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:16

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 96616-002 **Matrix: Air**
Description: SSMP-20-02 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
52. Trichlorofluoromethane	U		µg/m3	42	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	91	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
54. 1,2,4-Trimethylbenzene	U		µg/m3	140	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
55. 1,3,5-Trimethylbenzene	U		µg/m3	140	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
56. Vinyl Acetate	U		µg/m3	500	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
57. Vinyl Chloride	U	V+	µg/m3	29	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
58. m&p-Xylene	U		µg/m3	250	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
59. o-Xylene	U		µg/m3	1300	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 60. Xylenes	U		µg/m3	1500	110	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-003

Order: 96616
 Page: 8 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 3	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:13

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 96616-003A **Matrix: Air**
Description: SSMP-20-03 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 2. Acenaphthylene (SIM)	U	L-	µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U	L-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U	F-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U	F-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U	F-	µg/m3	2.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U	L-	µg/m3	2.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 96616-003 **Matrix: Air**
Description: SSMP-20-03 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
2. Benzene	U		µg/m3	19	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
3. Benzyl Chloride	U	V+	µg/m3	6.2	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
4. Bromodichloromethane	U		µg/m3	8.0	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
5. Bromoform	U		µg/m3	62	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
6. Bromomethane	U		µg/m3	23	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
7. 1,3-Butadiene	U	V+	µg/m3	1.2	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
8. 2-Butanone	U		µg/m3	35	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 9. Carbon Disulfide	U		µg/m3	37	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
10. Carbon Tetrachloride	U		µg/m3	7.5	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
11. Chlorobenzene	U		µg/m3	28	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
12. Chloroethane	U		µg/m3	16	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
13. Chloroform	U		µg/m3	5.9	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
14. Chloromethane	U	V+	µg/m3	12	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-003

Order: 96616
Page: 9 of 14
Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 3	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:13

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **96616-003** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-03 (061720)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
15. Cyclohexane	U		µg/m3	41	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
16. Dibromochloromethane	U		µg/m3	4.1	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
17. 1,2-Dichlorobenzene	U		µg/m3	63	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
18. 1,3-Dichlorobenzene	U		µg/m3	36	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
19. 1,4-Dichlorobenzene	U		µg/m3	36	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
20. Dichlorodifluoromethane	2300		µg/m3	30	17	06/24/20	VN20F24B	06/24/20	VN20F24B	KCM
21. 1,1-Dichloroethane	U		µg/m3	24	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
22. 1,2-Dichloroethane	U		µg/m3	4.9	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
23. 1,1-Dichloroethene	U		µg/m3	24	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
24. cis-1,2-Dichloroethene	U		µg/m3	24	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
25. trans-1,2-Dichloroethene	U		µg/m3	24	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
26. 1,2-Dichloropropane	U		µg/m3	28	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
27. cis-1,3-Dichloropropene	U		µg/m3	27	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
28. trans-1,3-Dichloropropene	U		µg/m3	27	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
29. 1,4-Dioxane	U		µg/m3	22	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 30. Ethyl Acetate	U		µg/m3	43	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
31. Ethylbenzene	U		µg/m3	52	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
32. Ethylene Dibromide	U		µg/m3	1.7	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
33. n-Heptane	U		µg/m3	49	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
34. Hexachlorobutadiene	U		µg/m3	5.4	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
35. n-Hexane	U		µg/m3	42	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 36. 2-Hexanone	U		µg/m3	49	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 37. Isopropanol	U		µg/m3	29	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
38. 4-Methyl-2-pentanone	U		µg/m3	49	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
39. Methylene Chloride	U		µg/m3	42	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 40. 2-Methylnaphthalene	U		µg/m3	160	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
41. MTBE	U		µg/m3	22	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 42. Naphthalene	U		µg/m3	28	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
43. Styrene	U		µg/m3	51	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
45. Tetrachloroethene	U		µg/m3	41	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
47. Toluene	U		µg/m3	23	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
48. 1,2,4-Trichlorobenzene	U		µg/m3	140	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
49. 1,1,1-Trichloroethane	U		µg/m3	33	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
51. Trichloroethene	U		µg/m3	1.6	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-003

Order: 96616
 Page: 10 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 3	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:13

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 96616-003 **Matrix: Air**
Description: SSMP-20-03 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
52. Trichlorofluoromethane	U		µg/m3	34	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
56. Vinyl Acetate	U		µg/m3	42	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
57. Vinyl Chloride	U	V+	µg/m3	15	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
58. m&p-Xylene	U		µg/m3	52	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
59. o-Xylene	U		µg/m3	95	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 60. Xylenes	U		µg/m3	110	8.0	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-004

Order: 96616
Page: 11 of 14
Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 4	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:00

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 96616-004A Matrix: Air
Description: SSMP-20-04 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 2. Acenaphthylene (SIM)	U	L-	µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 5. Benzo(a)pyrene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 6. Benzo(b)fluoranthene (SIM)	U	L-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 7. Benzo(ghi)perylene (SIM)	U	F-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 8. Benzo(k)fluoranthene (SIM)	U	F-	µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 9. Chrysene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 10. Dibenzo(a,h)anthracene (SIM)	U	F-	µg/m3	2.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 11. Fluoranthene (SIM)	U		µg/m3	1.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 12. Fluorene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 13. Indeno(1,2,3-cd)pyrene (SIM)	U	L-	µg/m3	2.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 14. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 15. Naphthalene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 16. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP
‡ 17. Pyrene (SIM)	U		µg/m3	5.0	1.0	06/19/20	PS20F19E	06/19/20	SG20F19A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 96616-004 Matrix: Air
Description: SSMP-20-04 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	110	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
2. Benzene	U		µg/m3	19	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
3. Benzyl Chloride	U	V+	µg/m3	6.2	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
4. Bromodichloromethane	U		µg/m3	8.0	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
5. Bromoform	U		µg/m3	62	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
6. Bromomethane	U		µg/m3	23	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
7. 1,3-Butadiene	U	V+	µg/m3	2.3	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
8. 2-Butanone	U		µg/m3	35	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 9. Carbon Disulfide	U		µg/m3	37	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
10. Carbon Tetrachloride	U		µg/m3	7.5	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
11. Chlorobenzene	U		µg/m3	28	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
12. Chloroethane	U		µg/m3	16	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
13. Chloroform	U		µg/m3	5.9	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
14. Chloromethane	U	V+	µg/m3	16	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-004

Order: 96616
Page: 12 of 14
Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 4	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:00

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **96616-004** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-04 (061720)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
15. Cyclohexane	U		µg/m3	41	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
16. Dibromochloromethane	U		µg/m3	4.1	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
17. 1,2-Dichlorobenzene	U		µg/m3	120	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
18. 1,3-Dichlorobenzene	U		µg/m3	36	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
19. 1,4-Dichlorobenzene	U		µg/m3	36	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
20. Dichlorodifluoromethane	4300		µg/m3	30	19	06/23/20	VN20F23A	06/24/20	VN20F23A	KCM
21. 1,1-Dichloroethane	U		µg/m3	24	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
22. 1,2-Dichloroethane	U		µg/m3	4.9	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
23. 1,1-Dichloroethene	U		µg/m3	24	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
24. cis-1,2-Dichloroethene	U		µg/m3	24	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
25. trans-1,2-Dichloroethene	U		µg/m3	24	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
26. 1,2-Dichloropropane	U		µg/m3	28	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
27. cis-1,3-Dichloropropene	U		µg/m3	27	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
28. trans-1,3-Dichloropropene	U		µg/m3	27	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
29. 1,4-Dioxane	U		µg/m3	22	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 30. Ethyl Acetate	U		µg/m3	43	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
31. Ethylbenzene	U		µg/m3	52	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
32. Ethylene Dibromide	U		µg/m3	3.3	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
33. n-Heptane	U		µg/m3	49	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
34. Hexachlorobutadiene	U		µg/m3	10	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
35. n-Hexane	U		µg/m3	42	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 36. 2-Hexanone	U		µg/m3	49	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 37. Isopropanol	U		µg/m3	29	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
38. 4-Methyl-2-pentanone	U		µg/m3	49	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
39. Methylene Chloride	U		µg/m3	42	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 40. 2-Methylnaphthalene	U		µg/m3	310	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
41. MTBE	U		µg/m3	22	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 42. Naphthalene	U		µg/m3	28	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
43. Styrene	U		µg/m3	51	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
45. Tetrachloroethene	U		µg/m3	41	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 46. Tetrahydrofuran	U		µg/m3	4.9	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
47. Toluene	U		µg/m3	23	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
48. 1,2,4-Trichlorobenzene	U		µg/m3	270	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
49. 1,1,1-Trichloroethane	U		µg/m3	33	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
51. Trichloroethene	U		µg/m3	2.2	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Analytical Laboratory Report
Laboratory Project Number: 96616
Laboratory Sample Number: 96616-004

Order: 96616
 Page: 13 of 14
 Date: 08/19/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (061720)	Chain of Custody: 187924
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 4	Collect Date: 06/17/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:00

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 96616-004 **Matrix: Air**
Description: SSMP-20-04 (061720)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
52. Trichlorofluoromethane	U		µg/m3	34	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
56. Vinyl Acetate	U		µg/m3	71	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
57. Vinyl Chloride	U	V+	µg/m3	15	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
58. m&p-Xylene	U		µg/m3	52	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
59. o-Xylene	U		µg/m3	180	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC
‡ 60. Xylenes	U		µg/m3	220	15	06/22/20	VN20F22C	06/23/20	VN20F22C	BRC

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Definitions/ Qualifiers:

- A:** Spike recovery or precision unusable due to dilution.
- B:** The analyte was detected in the associated method blank.
- E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J:** The concentration is an estimated value.
- M:** Modified Method
- U:** The analyte was not detected at or above the reporting limit.
- X:** Matrix Interference has resulted in a raised reporting limit or distorted result.
- W:** Results reported on a wet-weight basis.
- ***: Value reported is outside QC limits
- D:** The sample or extract was analyzed at a DF greater than 1.

Exception Summary:

- F-** : Recovery from the spiked aliquot exceeds the lower control limit (matrix spike or matrix spike duplicate).
- L-** : Recovery in the associated laboratory sample (LCS) exceeds the lower control limit. Results may be biased low.
- V+** : Recovery in the associated continuing calibration verification sample (CCV) exceeds the upper control limit. Results may be biased high.

Analysis Locations:

All analyses performed in Holt.



Accreditation Number(s):

T104704518-19-8 (TX)

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PS20F19E: Method Blank (MB)

EPA TO-13A (Modified)

Run Time: PS20F19E.MB 06/19/2020 17:40 [SG20F19A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Acenaphthene (SIM)	U		5.0
Acenaphthylene (SIM)	U		5.0
Anthracene (SIM)	U		5.0
Benzo(a)anthracene (SIM)	U		1.0
Benzo(a)pyrene (SIM)	U		1.0
Benzo(b)fluoranthene (SIM)	U		1.0
Benzo(ghi)perylene (SIM)	U		1.0
Benzo(k)fluoranthene (SIM)	U		1.0
Chrysene (SIM)	U		1.0
Dibenzo(a,h)anthracene (SIM)	U		2.0
Fluoranthene (SIM)	U		1.0
Fluorene (SIM)	U		5.0
Indeno(1,2,3-cd)pyrene (SIM)	U		2.0
2-Methylnaphthalene (SIM)	U		5.0
Naphthalene (SIM)	U		5.0
Phenanthrene (SIM)	U		2.0
Pyrene (SIM)	U		5.0
2-Fluorobiphenyl(S)	60	*	70-130
1-Fluoronaphthalene(S)	63	*	70-130
4-Terphenyl-d14(S)	60	*	70-130

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PS20F19E: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-13A (Modified)

Run Time: PS20F19E.LCS: 06/19/2020 19:42 [SG20F19A] PS20F19E.LCSD: 06/19/2020 19:01 [SG20F19A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%	%	
Acenaphthene (SIM)	10.0	8.81	88	70-130		10.0	7.02	70		23	30	
Acenaphthylene (SIM)	10.0	8.78	88	70-130		10.0	6.91	69	*	24	30	
Anthracene (SIM)	10.0	8.85	89	70-130		10.0	7.42	74		18	30	
Benzo(a)anthracene (SIM)	10.0	8.86	89	70-130		10.0	8.07	81		9	30	
Benzo(a)pyrene (SIM)	10.0	8.67	87	70-130		10.0	7.84	78		11	30	
Benzo(b)fluoranthene (SIM)	10.0	8.00	80	70-130		10.0	6.87	69	*	15	30	
Benzo(ghi)perylene (SIM)	10.0	7.85	78	70-130		10.0	7.10	71		9	30	
Benzo(k)fluoranthene (SIM)	10.0	7.43	74	70-130		10.0	6.62	66	*	11	30	
Chrysene (SIM)	10.0	8.98	90	70-130		10.0	8.26	83		8	30	
Dibenzo(a,h)anthracene (SIM)	10.0	7.73	77	70-130		10.0	7.31	73		5	30	
Fluoranthene (SIM)	10.0	8.80	88	70-130		10.0	7.58	76		15	30	
Fluorene (SIM)	10.0	9.43	94	70-130		10.0	7.51	75		22	30	
Indeno(1,2,3-cd)pyrene (SIM)	10.0	8.35	84	70-130		10.0	6.85	68	*	21	30	
2-Methylnaphthalene (SIM)	10.0	9.86	99	70-130		10.0	7.89	79		22	30	
Naphthalene (SIM)	10.0	9.39	94	70-130		10.0	7.98	80		16	30	
Phenanthrene (SIM)	10.0	9.20	92	70-130		10.0	7.87	79		15	30	
Pyrene (SIM)	10.0	9.17	92	70-130		10.0	8.05	81		13	30	
2-Fluorobiphenyl(S)			101	70-130				58	*			
1-Fluoronaphthalene(S)			109	70-130				63	*			
4-Terphenyl-d14(S)			114	70-130				73				

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VK20F22A: Method Blank (MB)

EPA TO-15

Run Time: VK20F22A.MB 06/22/2020 12:58 [VK20F22A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Acetone	U		57
Benzene	U		19
Benzyl Chloride	U		6.2
Bromodichloromethane	U		8.0
Bromoform	U		62
Bromomethane	U		23
1,3-Butadiene	U		0.66
2-Butanone	U		35
Carbon Disulfide	U		37
Carbon Tetrachloride	U		7.5
Chlorobenzene	U		28
Chloroethane	U		16
Chloroform	U		5.9
Chloromethane	U		12
Cyclohexane	U		41
Dibromochloromethane	U		4.1
1,2-Dichlorobenzene	U		36
1,3-Dichlorobenzene	U		36
1,4-Dichlorobenzene	U		36
1,1-Dichloroethane	U		24
1,2-Dichloroethane	U		4.9
1,1-Dichloroethene	U		24
cis-1,2-Dichloroethene	U		24
trans-1,2-Dichloroethene	U		24
1,2-Dichloropropane	U		28
cis-1,3-Dichloropropene	U		27
trans-1,3-Dichloropropene	U		27
1,4-Dioxane	U		22
Ethyl Acetate	U		43
Ethylbenzene	U		52
Ethylene Dibromide	U		0.92
n-Heptane	U		49
Hexachlorobutadiene	U		5.1

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VK20F22A: Method Blank (MB)

EPA TO-15

Run Time: VK20F22A.MB 06/22/2020 12:58 [VK20F22A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
n-Hexane	U		42
2-Hexanone	U		49
Isopropanol	U		29
4-Methyl-2-pentanone	U		49
Methylene Chloride	U		42
2-Methylnaphthalene	U		140
MTBE	U		22
Naphthalene	U		28
Styrene	U		51
1,1,2,2-Tetrachloroethane	U		3.3
Tetrachloroethene	U		41
Tetrahydrofuran	U		3.5
Toluene	U		23
1,2,4-Trichlorobenzene	U		89
1,1,1-Trichloroethane	U		33
1,1,2-Trichloroethane	U		6.5
Trichloroethene	U		1.6
Trichlorofluoromethane	U		34
1,1,2-Trichlorotrifluoroethane	U		46
1,2,4-Trimethylbenzene	U		29
1,3,5-Trimethylbenzene	U		29
Vinyl Acetate	U		42
Vinyl Chloride	U		15
m&p-Xylene	U		52
o-Xylene	U		52
4-Bromofluorobenzene(S)	90		80-120

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VK20F22A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20F22A.LCS: 06/22/2020 10:11 [VK20F22A] VK20F22A.LCSD: 06/22/2020 11:06 [VK20F22A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Acetone	25.8	24.7	96	70-130		25.8	25.9	100		4	20	
Benzene	37.6	35.1	93	70-130		37.6	35.4	94		1	20	
Benzyl Chloride	37.5	38.3	102	70-150		37.5	43.0	115		12	20	
Bromodichloromethane	77.3	74.2	96	70-130		77.3	77.7	101		5	20	
Bromoform	117	129	110	70-138		117	142	122		10	20	
Bromomethane	43.4	40.5	93	70-133		43.4	46.1	106		13	20	
1,3-Butadiene	26.1	24.9	95	70-134		26.1	28.7	110		15	20	
2-Butanone	32.6	32.8	101	70-130		32.6	36.5	112		10	20	
Carbon Disulfide	35.7	34.1	96	70-130		35.7	33.1	93		3	20	
Carbon Tetrachloride	71.8	68.2	95	70-131		71.8	76.0	106		11	20	
Chlorobenzene	54.0	52.2	97	70-130		54.0	54.3	101		4	20	
Chloroethane	29.6	27.4	92	70-130		29.6	31.4	106		14	20	
Chloroform	55.0	52.9	96	70-130		55.0	54.6	99		3	20	
Chloromethane	23.5	22.1	94	70-130		23.5	23.9	102		8	20	
Cyclohexane	40.6	40.8	101	70-130		40.6	41.6	102		1	20	
Dibromochloromethane	95.8	97.7	102	70-135		95.8	104	108		6	20	
1,2-Dichlorobenzene	66.8	69.6	104	70-130		66.8	71.0	106		2	20	
1,3-Dichlorobenzene	66.3	69.4	105	70-131		66.3	74.1	112		6	20	
1,4-Dichlorobenzene	66.5	70.1	105	70-134		66.5	73.1	110		5	20	
1,1-Dichloroethane	47.8	45.9	96	70-130		47.8	47.7	100		4	20	
1,2-Dichloroethane	47.8	46.3	97	70-130		47.8	51.2	107		10	20	
1,1-Dichloroethene	48.1	47.7	99	70-133		48.1	50.2	104		5	20	
cis-1,2-Dichloroethene	47.4	48.0	101	70-130		47.4	48.8	103		2	20	
trans-1,2-Dichloroethene	47.4	47.9	101	70-130		47.4	49.3	104		3	20	
1,2-Dichloropropane	54.4	51.5	95	70-130		54.4	53.3	98		3	20	
cis-1,3-Dichloropropene	53.2	54.8	103	70-131		53.2	54.7	103		0	20	
trans-1,3-Dichloropropene	46.3	47.8	103	70-134		46.3	48.8	105		2	20	
1,4-Dioxane	39.4	41.1	104	70-130		39.4	39.9	101		3	20	
Ethyl Acetate	31.8	32.0	101	70-130		31.8	32.5	102		1	20	
Ethylbenzene	50.8	53.6	105	70-130		50.8	52.6	104		1	20	
Ethylene Dibromide	90.1	91.7	102	70-130		90.1	91.4	101		1	20	
n-Heptane	48.3	47.6	99	70-132		48.3	53.4	111		11	20	
Hexachlorobutadiene	109	113	104	70-134		109	137	125		18	20	

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VK20F22A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20F22A.LCS: 06/22/2020 10:11 [VK20F22A] VK20F22A.LCSD: 06/22/2020 11:06 [VK20F22A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
n-Hexane	41.9	41.7	100	70-130		41.9	42.7	102		2	20	
2-Hexanone	39.6	43.0	108	70-139		39.6	47.1	119		10	20	
Isopropanol	27.8	28.3	102	54-144		27.8	31.4	113		10	20	
4-Methyl-2-pentanone	41.3	43.3	105	70-130		41.3	43.6	106		1	20	
Methylene Chloride	41.0	38.2	93	70-132		41.0	42.3	103		10	20	
2-Methylnaphthalene	37.7	40.9	109	70-146		37.7	44.2	117		7	20	
MTBE	44.3	52.9	119	70-130		44.3	50.7	114		4	20	
Naphthalene	52.8	62.0	118	70-148		52.8	60.8	115		3	20	
Styrene	49.6	57.6	116	70-130		49.6	53.9	109		6	20	
1,1,2,2-Tetrachloroethane	80.2	80.4	100	70-130		80.2	81.9	102		2	20	
Tetrachloroethene	79.7	79.9	100	70-130		79.7	84.6	106		6	20	
Tetrahydrofuran	34.5	35.6	103	70-138		34.5	39.9	116		12	20	
Toluene	44.6	44.5	100	70-130		44.6	44.5	100		0	20	
1,2,4-Trichlorobenzene	75.0	84.4	112	70-140		75.0	88.6	118		5	20	
1,1,1-Trichloroethane	63.6	59.2	93	70-130		63.6	63.5	100		7	20	
1,1,2-Trichloroethane	63.9	62.8	98	70-130		63.9	62.7	98		0	20	
Trichloroethene	62.4	60.4	97	70-130		62.4	60.5	97		0	20	
Trichlorofluoromethane	66.9	65.5	98	70-132		66.9	70.9	106		8	20	
1,1,2-Trichlorotrifluoroethane	92.1	88.9	96	70-130		92.1	88.2	96		0	20	
1,2,4-Trimethylbenzene	55.0	60.2	109	70-132		55.0	59.8	109		0	20	
1,3,5-Trimethylbenzene	55.2	59.7	108	70-131		55.2	59.7	108		0	20	
Vinyl Acetate	33.1	38.2	116	70-131		33.1	35.5	107		8	20	
Vinyl Chloride	29.6	27.9	94	70-131		29.6	32.3	109		15	20	
m&p-Xylene	104	105	101	70-130		104	104	100		1	20	
o-Xylene	50.6	53.3	105	70-130		50.6	53.6	106		1	20	
4-Bromofluorobenzene(S)			97	80-120				97				

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VN20F22C: Method Blank (MB)

EPA TO-15

Run Time: VN20F22C.MB 06/22/2020 19:13 [VN20F22C]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Acetone	U		57
Benzene	U		19
Benzyl Chloride	U		6.2
Bromodichloromethane	U		8.0
Bromoform	U		62
Bromomethane	U		23
1,3-Butadiene	U		0.66
2-Butanone	U		35
Carbon Disulfide	U		37
Carbon Tetrachloride	U		7.5
Chlorobenzene	U		28
Chloroethane	U		16
Chloroform	U		5.9
Chloromethane	U		12
Cyclohexane	U		41
Dibromochloromethane	U		4.1
1,2-Dichlorobenzene	U		36
1,3-Dichlorobenzene	U		36
1,4-Dichlorobenzene	U		36
Dichlorodifluoromethane	U		30
1,1-Dichloroethane	U		24
1,2-Dichloroethane	U		4.9
1,1-Dichloroethene	U		24
cis-1,2-Dichloroethene	U		24
trans-1,2-Dichloroethene	U		24
1,2-Dichloropropane	U		28
cis-1,3-Dichloropropene	U		27
trans-1,3-Dichloropropene	U		27
1,4-Dioxane	U		22
Ethyl Acetate	U		43
Ethylbenzene	U		52
Ethylene Dibromide	U		0.92
n-Heptane	U		49

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F: (231) 775-8584

VN20F22C: Method Blank (MB)

EPA TO-15

Run Time: VN20F22C.MB 06/22/2020 19:13 [VN20F22C]

Analyte	MB Result µg/m3	MB Qualifier	MB RDL µg/m3
Hexachlorobutadiene	U		5.1
n-Hexane	U		42
2-Hexanone	U		49
Isopropanol	U		29
4-Methyl-2-pentanone	U		49
Methylene Chloride	U		42
2-Methylnaphthalene	U		140
MTBE	U		22
Naphthalene	U		28
Styrene	U		51
1,1,2,2-Tetrachloroethane	U		3.3
Tetrachloroethene	U		41
Tetrahydrofuran	U		3.5
Toluene	U		23
1,2,4-Trichlorobenzene	U		89
1,1,1-Trichloroethane	U		33
1,1,2-Trichloroethane	U		6.5
Trichloroethene	U		1.6
Trichlorofluoromethane	U		34
1,1,2-Trichlorotrifluoroethane	U		46
1,2,4-Trimethylbenzene	U		29
1,3,5-Trimethylbenzene	U		29
Vinyl Acetate	U		42
Vinyl Chloride	U		15
m&p-Xylene	U		52
o-Xylene	U		52
4-Bromofluorobenzene(S)	80		80-120

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VN20F22C: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VN20F22C.LCS: 06/22/2020 16:23 [VN20F22C] VN20F22C.LCSD: 06/22/2020 17:19 [VN20F22C]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Acetone	25.8	30.1	117	70-130		25.8	30.9	120		3	20	
Benzene	37.6	35.9	96	70-130		37.6	36.3	97		1	20	
Benzyl Chloride	37.5	44.8	120	70-150		37.5	46.1	123		2	20	
Bromodichloromethane	77.3	74.2	96	70-130		77.3	75.0	97		1	20	
Bromoform	117	104	89	70-138		117	105	89		0	20	
Bromomethane	43.4	43.0	99	70-133		43.4	43.3	100		1	20	
1,3-Butadiene	26.1	31.6	121	70-134		26.1	32.1	123		2	20	
2-Butanone	32.6	36.4	112	70-130		32.6	37.8	116		4	20	
Carbon Disulfide	35.7	36.9	103	70-130		35.7	37.2	104		1	20	
Carbon Tetrachloride	71.8	61.4	86	70-131		71.8	61.4	86		0	20	
Chlorobenzene	54.0	50.1	93	70-130		54.0	50.0	93		0	20	
Chloroethane	29.6	33.6	113	70-130		29.6	34.1	115		2	20	
Chloroform	55.0	55.3	101	70-130		55.0	55.6	101		0	20	
Chloromethane	23.5	28.9	123	70-130		23.5	29.4	125		2	20	
Cyclohexane	40.6	41.8	103	70-130		40.6	42.3	104		1	20	
Dibromochloromethane	95.8	86.4	90	70-135		95.8	86.2	90		0	20	
1,2-Dichlorobenzene	66.8	56.2	84	70-130		66.8	57.6	86		2	20	
1,3-Dichlorobenzene	66.3	60.1	91	70-131		66.3	60.9	92		1	20	
1,4-Dichlorobenzene	66.5	61.2	92	70-134		66.5	62.0	93		1	20	
Dichlorodifluoromethane	56.8	58.3	103	70-132		56.8	58.8	104		1	20	
1,1-Dichloroethane	47.8	50.5	106	70-130		47.8	50.9	107		1	20	
1,2-Dichloroethane	47.8	49.4	103	70-130		47.8	50.0	104		1	20	
1,1-Dichloroethene	48.1	51.3	107	70-133		48.1	51.6	107		0	20	
cis-1,2-Dichloroethene	47.4	51.0	108	70-130		47.4	51.4	108		0	20	
trans-1,2-Dichloroethene	47.4	50.4	106	70-130		47.4	50.8	107		1	20	
1,2-Dichloropropane	54.4	55.8	103	70-130		54.4	56.5	104		1	20	
cis-1,3-Dichloropropene	53.2	52.7	99	70-131		53.2	53.4	100		1	20	
trans-1,3-Dichloropropene	46.3	45.3	98	70-134		46.3	46.1	99		1	20	
1,4-Dioxane	39.4	35.9	91	70-130		39.4	37.4	95		4	20	
Ethyl Acetate	31.8	33.7	106	70-130		31.8	34.8	109		3	20	
Ethylbenzene	50.8	49.3	97	70-130		50.8	49.3	97		0	20	
Ethylene Dibromide	90.1	84.7	94	70-130		90.1	84.8	94		0	20	
n-Heptane	48.3	52.5	109	70-132		48.3	53.3	110		1	20	

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VN20F22C: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VN20F22C.LCS: 06/22/2020 16:23 [VN20F22C] VN20F22C.LCSD: 06/22/2020 17:19 [VN20F22C]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Hexachlorobutadiene	109	79.4	73	70-134		109	81.1	74		1	20	
n-Hexane	41.9	44.7	107	70-130		41.9	45.2	108		1	20	
2-Hexanone	39.6	44.5	112	70-139		39.6	46.0	116		4	20	
Isopropanol	27.8	30.9	111	54-144		27.8	32.5	117		5	20	
4-Methyl-2-pentanone	41.3	42.4	103	70-130		41.3	44.5	108		5	20	
Methylene Chloride	41.0	43.5	106	70-132		41.0	43.9	107		1	20	
2-Methylnaphthalene	37.7	27.8	74	70-146		37.7	29.2	77		4	20	
MTBE	44.3	47.6	107	70-130		44.3	49.0	110		3	20	
Naphthalene	52.8	54.5	103	70-148		52.8	56.1	106		3	20	
Styrene	49.6	47.4	96	70-130		49.6	47.5	96		0	20	
1,1,2,2-Tetrachloroethane	80.2	79.5	99	70-130		80.2	81.9	102		3	20	
Tetrachloroethene	79.7	64.9	81	70-130		79.7	64.5	81		0	20	
Tetrahydrofuran	34.5	36.8	107	70-138		34.5	38.2	111		4	20	
Toluene	44.6	41.8	94	70-130		44.6	41.6	93		1	20	
1,2,4-Trichlorobenzene	75.0	53.6	71	70-140		75.0	54.9	73		3	20	
1,1,1-Trichloroethane	63.6	56.5	89	70-130		63.6	56.7	89		0	20	
1,1,2-Trichloroethane	63.9	59.8	94	70-130		63.9	59.6	93		1	20	
Trichloroethene	62.4	60.3	96	70-130		62.4	60.7	97		1	20	
Trichlorofluoromethane	66.9	62.3	93	70-132		66.9	62.4	93		0	20	
1,1,2-Trichlorotrifluoroethane	92.1	88.4	96	70-130		92.1	88.2	96		0	20	
1,2,4-Trimethylbenzene	55.0	51.3	93	70-132		55.0	52.3	95		2	20	
1,3,5-Trimethylbenzene	55.2	51.3	93	70-131		55.2	52.3	95		2	20	
Vinyl Acetate	33.1	35.8	108	70-131		33.1	36.0	109		1	20	
Vinyl Chloride	29.6	34.4	116	70-131		29.6	35.0	118		2	20	
m&p-Xylene	104	93.1	89	70-130		104	93.4	90		1	20	
o-Xylene	50.6	51.2	101	70-130		50.6	51.6	102		1	20	
4-Bromofluorobenzene(S)			87	80-120				87				

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VN20F23A: Method Blank (MB)

EPA TO-15

Run Time: VN20F23A.MB 06/23/2020 15:27 [VN20F23A]

Analyte	MB Result	MB Qualifier	MB RDL
Dichlorodifluoromethane	U		30
4-Bromofluorobenzene(S)	77	*	80-120

VN20F23A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VN20F23A.LCS: 06/23/2020 12:36 [VN20F23A] VN20F23A.LCSD: 06/23/2020 13:32 [VN20F23A]

Analyte	LCS Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier	LCSD Spike Amount	LCSD Result	LCSD Rec.	LCSD Qualifier	RPD	RPD Limits	RPD Qualifier
Dichlorodifluoromethane	56.8	64.8	114	70-132		56.8	65.2	115		1	20	
4-Bromofluorobenzene(S)			86	80-120				85				

VN20F24B: Method Blank (MB)

EPA TO-15

Run Time: VN20F24B.MB 06/24/2020 15:41 [VN20F24B]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Dichlorodifluoromethane	U		30
4-Bromofluorobenzene(S)	80		80-120

VN20F24B: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VN20F24B.LCS: 06/24/2020 12:50 [VN20F24B] VN20F24B.LCSD: 06/24/2020 13:46 [VN20F24B]

Analyte	LCS Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier	LCSD Spike Amount	LCSD Result	LCSD Rec.	LCSD Qualifier	RPD	RPD Limits	RPD Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%	%	
Dichlorodifluoromethane	56.8	65.5	115	70-132		56.8	65.4	115		0	20	
4-Bromofluorobenzene(S)			88	80-120				89				

Definitions/ Qualifiers:

U: The analyte was not detected at or above the Reporting Limit (RL).
*****: Value reported is outside QC limits


Exception Summary:

Exceptions have been properly noted on reported results or affected samples have been scheduled for reanalysis when appropriate.

Report Generated By:



By Sharon Rakow at 5:41 PM, Aug 19, 2020

Client Name: <u>Arcadis of Michigan, LLC</u>			MATRIX (SEE RIGHT CORNER FOR COO)	# OF CONTAINERS	PARAMETERS										Matrix Code		Deliverables	
Contact Person: <u>Tiffany Linder</u>					HOLD SAMPLE	S	Soil	GW	Ground Water	<input type="checkbox"/>	Level 2							
Project Name/ Number: <u>RACER Lansing / 30042872.00102</u>						A	Air	SW	Surface Water	<input type="checkbox"/>	Level 3							
Email distribution list: <u>Tiffany.Linder@arcadis.com</u>						O	Oil	WW	Waste Water	<input type="checkbox"/>	Level 4							
Quote#						P	Wipe	X	Other, Specify	<input type="checkbox"/>	EDD							
Purchase Order#																		
Date	Time	Sample #	Client Sample Descriptor	A	1	X	X										Remarks:	
<u>6/17/20</u>	<u>1137</u>	<u>1</u>	<u>SSMP-20-01(061720)</u>														<u>* TO-13A for phenanthrene only</u>	
<u>6/17/20</u>	<u>1216</u>	<u>2</u>	<u>SSMP-20-02(061720)</u>															
<u>6/17/20</u>	<u>1313</u>	<u>3</u>	<u>SSMP-20-03(061720)</u>															
<u>6/17/20</u>	<u>1400</u>	<u>4</u>	<u>SSMP-20-04(061720)</u>															
Received By Lab																		
<u>6/17/2020</u>																		
initials <u>JL</u>																		
Comments:																		
Sampled/Relinquished By: <u>Paul Westhuis / Austin Westhuis / Arcadis</u>				Date/ Time <u>6/17/20 1515</u>				Received By: 										
Relinquished By:				Date/ Time				Received By:										
Relinquished By:				Date/ Time				Received By Laboratory:										
Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY												LAB USE ONLY						
<input type="checkbox"/> 1 bus. day <input type="checkbox"/> 2 bus. days <input type="checkbox"/> 3 bus. days <input type="checkbox"/> 4 bus. days <input checked="" type="checkbox"/> 5-7 bus. days (standard) Other (specify time/date requirement): _____												Fibertec project number: <u>96616</u> Temperature upon receipt at Lab: <u>3.8°C</u> <u>Bottle was at room temp</u>						
Please see back for terms and conditions																		

Received
On Ice



Monday, September 14, 2020

Fibertec Project Number: 97840
Project Identification: RACER Lansing (30042872.00102) /30042872.00102
Submittal Date: 09/03/2020

Ms. Tiffany Linder
Arcadis U.S., Inc. - Novi
28550 Cabot Drive
Suite 500
Novi, MI 48377

Dear Ms. Linder,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

By Anthony Donnelly at 11:09 AM, Sep 14, 2020

For Daryl P. Strandbergh
Laboratory Director

Enclosures

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-001

Order: 97840
Page: 2 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:22

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 97840-001A **Matrix: Air**
Description: SSMP-20-01 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U	F-	µg/m3	1.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 5. Fluorene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 7. Naphthalene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 8. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 9. Pyrene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 97840-001 **Matrix: Air**
Description: SSMP-20-01 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
2. Benzene	U		µg/m3	19	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
5. Bromoform	U		µg/m3	62	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
6. Bromomethane	U		µg/m3	23	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
12. Chloroethane	U		µg/m3	16	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
13. Chloroform	54		µg/m3	5.9	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
14. Chloromethane	U		µg/m3	12	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
20. Dichlorodifluoromethane	6900		µg/m3	30	100	09/09/20	VK20I09A	09/09/20	VK20I09A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-001

Order: 97840
Page: 3 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:22

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **97840-001** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-01 (0903020)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
33. n-Heptane	U		µg/m3	49	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
35. n-Hexane	U		µg/m3	42	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
41. MTBE	U		µg/m3	22	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
43. Styrene	U		µg/m3	51	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
45. Tetrachloroethene	79		µg/m3	41	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
47. Toluene	U		µg/m3	23	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
51. Trichloroethene	U		µg/m3	1.6	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM
59. o-Xylene	U		µg/m3	52	4.0	09/08/20	VK20108A	09/08/20	VK20108A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-001

Order: 97840
Page: 4 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:22

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)	Aliquot ID: 97840-001	Matrix: Air
Method: EPA TO-15	Description: SSMP-20-01 (0903020)	

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 60. Xylenes	U		µg/m3	100	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-002

Order: 97840
Page: 5 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:05

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 97840-002A Matrix: Air
Description: SSMP-20-02 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U	F-	µg/m3	1.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 5. Fluorene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 7. Naphthalene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 8. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 9. Pyrene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 97840-002 Matrix: Air
Description: SSMP-20-02 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
2. Benzene	U		µg/m3	19	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
5. Bromoform	U		µg/m3	62	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
6. Bromomethane	U		µg/m3	23	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
12. Chloroethane	U		µg/m3	16	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
14. Chloromethane	U		µg/m3	12	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
20. Dichlorodifluoromethane	14000		µg/m3	30	150	09/09/20	VK20I09A	09/09/20	VK20I09A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-002

Order: 97840
Page: 6 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:05

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **97840-002** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-02 (0903020)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
33. n-Heptane	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
35. n-Hexane	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
41. MTBE	U		µg/m3	22	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
43. Styrene	U		µg/m3	51	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
47. Toluene	U		µg/m3	23	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
51. Trichloroethene	U		µg/m3	1.6	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
59. o-Xylene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-002

Order: 97840
 Page: 7 of 16
 Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:05

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 97840-002 **Matrix: Air**
Description: SSMP-20-02 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 60.Xylenes	U		µg/m3	100	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-003

Order: 97840
Page: 8 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:42

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 97840-003A Matrix: Air
Description: SSMP-20-03 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U	F-	µg/m3	1.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 5. Fluorene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 7. Naphthalene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 8. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 9. Pyrene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 97840-003 Matrix: Air
Description: SSMP-20-03 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
2. Benzene	U		µg/m3	19	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
5. Bromoform	U		µg/m3	62	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
6. Bromomethane	U		µg/m3	23	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
12. Chloroethane	U		µg/m3	16	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
14. Chloromethane	U		µg/m3	12	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
20. Dichlorodifluoromethane	5400		µg/m3	30	26	09/09/20	VK20I09A	09/09/20	VK20I09A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-003

Order: 97840
 Page: 9 of 16
 Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:42

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **97840-003** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-03 (0903020)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
33. n-Heptane	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
35. n-Hexane	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
41. MTBE	U		µg/m3	22	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
43. Styrene	U		µg/m3	51	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
47. Toluene	U		µg/m3	23	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
51. Trichloroethene	U		µg/m3	1.6	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
59. o-Xylene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-003

Order: 97840
Page: 10 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:42

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 97840-003 **Matrix: Air**
Description: SSMP-20-03 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 60. Xylenes	U		µg/m3	100	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-004

Order: 97840
Page: 11 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:09

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 97840-004A Matrix: Air
Description: SSMP-20-04 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U	F-	µg/m3	1.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 5. Fluorene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 7. Naphthalene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 8. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 9. Pyrene (SIM)	U		µg/m3	5.0	1.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 97840-004 Matrix: Air
Description: SSMP-20-04 (0903020)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
2. Benzene	U		µg/m3	19	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
5. Bromoform	U		µg/m3	62	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
6. Bromomethane	U		µg/m3	23	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
12. Chloroethane	U		µg/m3	16	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
14. Chloromethane	U		µg/m3	12	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
20. Dichlorodifluoromethane	6600		µg/m3	30	140	09/09/20	VK20I09A	09/09/20	VK20I09A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-004

Order: 97840
Page: 12 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:09

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **97840-004** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-04 (0903020)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
33. n-Heptane	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
35. n-Hexane	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
41. MTBE	U		µg/m3	22	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
43. Styrene	U		µg/m3	51	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
47. Toluene	U		µg/m3	23	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
51. Trichloroethene	U		µg/m3	1.6	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM
59. o-Xylene	U		µg/m3	52	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-004

Order: 97840
Page: 13 of 16
Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (0903020)	Chain of Custody: 193321
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:09

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)	Aliquot ID: 97840-004	Matrix: Air
Method: EPA TO-15	Description: SSMP-20-04 (0903020)	

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 60. Xylenes	U		µg/m3	100	4.0	09/08/20	VK20I08A	09/08/20	VK20I08A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-005

Order: 97840
 Page: 14 of 16
 Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: Field Blank	Chain of Custody: N/A
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Blank: Tube	Collect Time: 10:30

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS Aliquot ID: **97840-005** Matrix: **Blank: Tube**
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified) Description: **Field Blank**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 3. Anthracene (SIM)	U		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U	F-	µg	0.0010	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 5. Fluorene (SIM)	U		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 7. Naphthalene (SIM)	U		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 8. Phenanthrene (SIM)	U		µg	0.0029	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 9. Pyrene (SIM)	U		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP

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Analytical Laboratory Report
Laboratory Project Number: 97840
Laboratory Sample Number: 97840-006

Order: 97840
 Page: 15 of 16
 Date: 09/14/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: Field Matrix Spike	Chain of Custody: N/A
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 09/03/20
Client Project No: 30042872.00102	Sample Matrix: Field Spike: Tube	Collect Time: NA

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS Aliquot ID: **97840-006** Matrix: **Field Spike: Tube**
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified) Description: **Field Matrix Spike**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	0.0088		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 2. Acenaphthylene (SIM)	0.011		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 3. Anthracene (SIM)	0.0080		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 4. Benzo(a)anthracene (SIM)	0.0051	F-	µg	0.0010	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 5. Fluorene (SIM)	0.010		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	0.0088		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 7. Naphthalene (SIM)	0.010		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 8. Phenanthrene (SIM)	0.013		µg	0.0025	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP
‡ 9. Pyrene (SIM)	0.012		µg	0.0050	2.0	09/09/20	PS20I09F	09/09/20	SG20I09A	GJP

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Definitions/ Qualifiers:

- A:** Spike recovery or precision unusable due to dilution.
- B:** The analyte was detected in the associated method blank.
- E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J:** The concentration is an estimated value.
- M:** Modified Method
- U:** The analyte was not detected at or above the reporting limit.
- X:** Matrix Interference has resulted in a raised reporting limit or distorted result.
- W:** Results reported on a wet-weight basis.
- ***: Value reported is outside QC limits
- D:** The sample or extract was analyzed at a DF greater than 1.

Exception Summary:

- F-** : Recovery from the spiked aliquot exceeds the lower control limit (matrix spike or matrix spike duplicate).

Analysis Locations:

All analyses performed in Holt.



Accreditation Number(s):

T104704518-19-8 (TX)

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Client Name: <i>Tiffany Linder / Arcadis</i>			MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	70-15	70-13A	PARAMETERS										Matrix Code		Deliverables		
Contact Person: <i>Tiffany Linder</i>							HOLD SAMPLE	S	Soil	GW	Ground Water										Level 2
Project Name/ Number: <i>RACER Lansing / 30042872.00102</i>								A	Air	SW	Surface Water										Level 3
Email distribution list: <i>Tiffany.Linder@arcadis.com</i>								O	Oil	WW	Waste Water										Level 4
Quote#								P	Wipe	X	Other: Specify										EDD
Purchase Order#			Remarks:																		
Date	Time	Sample #	Client Sample Descriptor																		
9/3/20	1122	—	SSMP-20-01(090320)	A	2	X	X														
9/3/20	1205	—	SSMP-20-02(090320)	A	2	X	X														
9/3/20	1242	—	SSMP-20-03(090320)	A	2	X	X														
9/3/20	1409	—	SSMP-20-04(090320)	A	2	X	X														

Received By Lab
SEP 03 2020
Initials: TM

Comments:
** Report the full coc. lists*

Sampled/Relinquished By: <i>Austin Westhuis / Ann L. W. L. / Arcadis</i>	Date/ Time <i>9/3/20 / 1530</i>	Received By: 
Relinquished By:	Date/ Time	Received By:
Relinquished By:	Date/ Time	Received By Laboratory:

Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY				LAB USE ONLY	
<input type="checkbox"/> 1 bus. day	<input type="checkbox"/> 2 bus. days	<input type="checkbox"/> 3 bus. days	<input type="checkbox"/> 4 bus. days	Fibertec project number: <i>97840</i>	
<input checked="" type="checkbox"/> 5-7 bus. days (standard)	Other (specify time/date requirement): _____			Temperature upon receipt at Lab: <i>BT Air @ Can temp Tubes ?</i>	

Received
On Ice



Fibertec Environmental Services Vapor Tube Sampling Field Worksheet

Client name: *Arcadis*

Project Manager: *Tiffany Linder*

Sample Date: *9/3/20*

Project Name / Number: *RACEK Lansing / 30042872.01020*

Sampled By: *Austin Westhuis*

Sample Identifiers			Field Calibration				
Sample Descriptor	Tube Serial number	Pump # Rotameter #	Analysis Requested	Field Pre Cal Rate	Field Post Cal Rate	Field Cal Average	Total Time
Field Blank (Open ends, and then cap.)	8501902488	NA NA	TO-13	--	--	--	--
Field Spike (Carry to sample site, then return.)	8501902492	NA NA	TO-13	--	--	--	--
SSMP-20-01(090320)	8501902442	Pump # 10002663 Rotameter # 01891504119	TO-13	0.2 L/min	0.2 L/min	0.2 L/min	10 min
SSMP-20-02(090320)	8501902444	Pump # 10002663 Rotameter # 01891504119	TO-13	0.2 L/min	0.2 L/min	0.2 L/min	10 min
SSMP-20-03(090320)	8501902447	Pump # 10002663 Rotameter # 01891504119	TO-13	0.2 L/min	0.2 L/min	0.2 L/min	10 min
SSMP-20-04(090320)	8501902445	Pump # 10002663 Rotameter # 01891504119	TO-13	0.2 L/min	0.2 L/min	0.2 L/min	10 min

Comments: ** Report the full COC list*

PS20I09F: Method Blank (MB)

EPA TO-13A (Modified)

Run Time: PS20I09F.MB 09/09/2020 16:48 [SG20I09A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Acenaphthene (SIM)	U		5.0
Acenaphthylene (SIM)	U		5.0
Anthracene (SIM)	U		5.0
Benzo(a)anthracene (SIM)	U		1.0
Fluorene (SIM)	U		5.0
2-Methylnaphthalene (SIM)	U		5.0
Naphthalene (SIM)	U		5.0
Phenanthrene (SIM)	U		2.0
Pyrene (SIM)	U		5.0
2-Fluorobiphenyl(S)	77		70-130
1-Fluoronaphthalene(S)	79		70-130
4-Terphenyl-d14(S)	104		70-130

PS20I09F: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-13A (Modified)

Run Time: PS20I09F.LCS: 09/09/2020 17:13 [SG20I09A] PS20I09F.LCSD: 09/09/2020 17:39 [SG20I09A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount	µg/m3	%	%	Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3				µg/m3	µg/m3					
Acenaphthene (SIM)	10.0	8.37	84	70-130		10.0	9.84	98		15	30	
Acenaphthylene (SIM)	10.0	10.0	100	70-130		10.0	12.6	126		23	30	
Anthracene (SIM)	10.0	8.39	84	70-130		10.0	8.94	89		6	30	
Benzo(a)anthracene (SIM)	10.0	7.01	70	70-130		10.0	7.01	70		0	30	
Fluorene (SIM)	10.0	10.4	104	70-130		10.0	11.0	110		6	30	
2-Methylnaphthalene (SIM)	10.0	8.83	88	70-130		10.0	9.97	100		13	30	
Naphthalene (SIM)	10.0	9.34	93	70-130		10.0	10.3	103		10	30	
Phenanthrene (SIM)	10.0	11.9	119	70-130		10.0	12.1	121		2	30	
Pyrene (SIM)	10.0	12.6	126	70-130		10.0	12.9	129		2	30	
2-Fluorobiphenyl(S)			93	70-130				106				
1-Fluoronaphthalene(S)			95	70-130				105				
4-Terphenyl-d14(S)			125	70-130				132	*			

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VK20I08A: Method Blank (MB)

EPA TO-15

Run Time: VK20I08A.MB 09/08/2020 13:32 [VK20I08A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Acetone	U		57
Benzene	U		19
Benzyl Chloride	U		6.2
Bromodichloromethane	U		8.0
Bromoform	U		62
Bromomethane	U		23
1,3-Butadiene	U		0.66
2-Butanone	U		35
Carbon Disulfide	U		37
Carbon Tetrachloride	U		7.5
Chlorobenzene	U		28
Chloroethane	U		16
Chloroform	U		5.9
Chloromethane	U		12
Cyclohexane	U		41
Dibromochloromethane	U		4.1
1,2-Dichlorobenzene	U		36
1,3-Dichlorobenzene	U		36
1,4-Dichlorobenzene	U		36
1,1-Dichloroethane	U		24
1,2-Dichloroethane	U		4.9
1,1-Dichloroethene	U		24
cis-1,2-Dichloroethene	U		24
trans-1,2-Dichloroethene	U		24
1,2-Dichloropropane	U		28
cis-1,3-Dichloropropene	U		27
trans-1,3-Dichloropropene	U		27
1,4-Dioxane	U		22
Ethyl Acetate	U		43
Ethylbenzene	U		52
Ethylene Dibromide	U		0.92
n-Heptane	U		49
Hexachlorobutadiene	U		5.1

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VK20I08A: Method Blank (MB)

EPA TO-15

Run Time: VK20I08A.MB 09/08/2020 13:32 [VK20I08A]

Analyte	MB Result µg/m3	MB Qualifier	MB RDL µg/m3
n-Hexane	U		42
2-Hexanone	U		49
Isopropanol	U		29
4-Methyl-2-pentanone	U		49
Methylene Chloride	U		42
2-Methylnaphthalene	U		140
MTBE	U		22
Naphthalene	U		28
Styrene	U		51
1,1,2,2-Tetrachloroethane	U		3.3
Tetrachloroethene	U		41
Tetrahydrofuran	U		3.5
Toluene	U		23
1,2,4-Trichlorobenzene	U		89
1,1,1-Trichloroethane	U		33
1,1,2-Trichloroethane	U		6.5
Trichloroethene	U		1.6
Trichlorofluoromethane	U		34
1,1,2-Trichlorotrifluoroethane	U		46
1,2,4-Trimethylbenzene	U		29
1,3,5-Trimethylbenzene	U		29
Vinyl Acetate	U		42
Vinyl Chloride	U		15
m&p-Xylene	U		52
o-Xylene	U		52
4-Bromofluorobenzene(S)	93		80-120

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VK20I08A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20I08A.LCS: 09/08/2020 10:46 [VK20I08A] VK20I08A.LCSD: 09/08/2020 11:40 [VK20I08A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Acetone	31.1	28.9	93	70-130		31.1	29.1	94		1	20	
Benzene	41.2	36.0	87	70-130		41.2	36.4	88		1	20	
Benzyl Chloride	65.7	67.8	103	70-150		65.7	68.8	105		2	20	
Bromodichloromethane	84.7	72.1	85	70-130		84.7	72.7	86		1	20	
Bromoform	134	132	99	70-138		134	134	100		1	20	
Bromomethane	51.7	47.3	92	70-133		51.7	47.8	92		0	20	
1,3-Butadiene	28.6	26.8	94	70-134		28.6	27.2	95		1	20	
2-Butanone	37.8	31.1	82	70-130		37.8	31.2	83		1	20	
Carbon Disulfide	38.8	34.8	90	70-130		38.8	35.2	91		1	20	
Carbon Tetrachloride	81.7	67.7	83	70-131		81.7	68.5	84		1	20	
Chlorobenzene	59.5	56.2	94	70-130		59.5	56.2	94		0	20	
Chloroethane	35.2	32.7	93	70-130		35.2	33.8	96		3	20	
Chloroform	64.0	55.9	87	70-130		64.0	56.7	89		2	20	
Chloromethane	26.9	23.5	87	70-130		26.9	23.3	87		0	20	
Cyclohexane	43.9	40.5	92	70-130		43.9	40.6	93		1	20	
Dibromochloromethane	112	110	98	70-135		112	110	98		0	20	
1,2-Dichlorobenzene	75.3	71.5	95	70-130		75.3	72.4	96		1	20	
1,3-Dichlorobenzene	76.0	72.2	95	70-131		76.0	72.8	96		1	20	
1,4-Dichlorobenzene	75.6	73.2	97	70-134		75.6	74.1	98		1	20	
1,1-Dichloroethane	51.4	44.7	87	70-130		51.4	45.2	88		1	20	
1,2-Dichloroethane	50.8	42.8	84	70-130		50.8	43.8	86		2	20	
1,1-Dichloroethene	51.0	45.3	89	70-133		51.0	45.9	90		1	20	
cis-1,2-Dichloroethene	50.4	46.0	91	70-130		50.4	46.5	92		1	20	
trans-1,2-Dichloroethene	50.8	47.1	93	70-130		50.8	47.3	93		0	20	
1,2-Dichloropropane	60.3	51.4	85	70-130		60.3	51.8	86		1	20	
cis-1,3-Dichloropropene	58.8	54.8	93	70-131		58.8	55.0	94		1	20	
trans-1,3-Dichloropropene	57.7	52.4	91	70-134		57.7	53.1	92		1	20	
1,4-Dioxane	46.6	43.9	94	70-130		46.6	44.4	95		1	20	
Ethyl Acetate	45.7	43.6	95	70-130		45.7	44.0	96		1	20	
Ethylbenzene	54.1	55.2	102	70-130		54.1	55.3	102		0	20	
Ethylene Dibromide	101	99.4	98	70-130		101	99.5	99		1	20	
n-Heptane	52.7	44.4	84	70-132		52.7	44.7	85		1	20	
Hexachlorobutadiene	135	116	86	70-134		135	118	88		2	20	

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VK20I08A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20I08A.LCS: 09/08/2020 10:46 [VK20I08A] VK20I08A.LCSD: 09/08/2020 11:40 [VK20I08A]

Analyte	LCS Spike Amount µg/m3	LCS Result µg/m3	LCS Rec. %	Rec. Limits %	LCS Qualifier	LCSD Spike Amount µg/m3	LCSD Result µg/m3	LCSD Rec. %	LCSD Qualifier	RPD %	RPD Limits %	RPD Qualifier
n-Hexane	44.6	39.1	88	70-130		44.6	39.1	88		0	20	
2-Hexanone	52.2	50.5	97	70-139		52.2	50.3	96		1	20	
Isopropanol	32.0	27.7	87	54-144		32.0	27.6	86		1	20	
4-Methyl-2-pentanone	52.3	47.4	91	70-130		52.3	48.0	92		1	20	
Methylene Chloride	43.8	36.3	83	70-132		43.8	36.9	84		1	20	
2-Methylnaphthalene	73.7	59.9	81	70-146		73.7	62.7	85		5	20	
MTBE	46.7	44.5	95	70-130		46.7	45.4	97		2	20	
Naphthalene	65.2	68.6	105	70-148		65.2	70.6	108		3	20	
Styrene	54.4	60.3	111	70-130		54.4	60.9	112		1	20	
1,1,2,2-Tetrachloroethane	88.3	72.0	82	70-130		88.3	72.6	82		0	20	
Tetrachloroethene	86.7	82.5	95	70-130		86.7	82.4	95		0	20	
Tetrahydrofuran	38.3	32.9	86	70-138		38.3	33.2	87		1	20	
Toluene	48.1	47.8	99	70-130		48.1	48.2	100		1	20	
1,2,4-Trichlorobenzene	93.0	93.4	100	70-140		93.0	95.7	103		3	20	
1,1,1-Trichloroethane	69.9	57.2	82	70-130		69.9	57.9	83		1	20	
1,1,2-Trichloroethane	72.7	70.9	97	70-130		72.7	70.7	97		0	20	
Trichloroethene	68.4	69.8	102	70-130		68.4	70.5	103		1	20	
Trichlorofluoromethane	71.3	61.1	86	70-132		71.3	63.2	89		3	20	
1,1,2-Trichlorotrifluoroethane	95.2	87.2	92	70-130		95.2	88.0	92		0	20	
1,2,4-Trimethylbenzene	61.2	62.1	101	70-132		61.2	62.8	103		2	20	
1,3,5-Trimethylbenzene	62.7	64.6	103	70-131		62.7	65.4	104		1	20	
Vinyl Acetate	46.4	45.9	99	70-131		46.4	46.5	100		1	20	
Vinyl Chloride	32.0	29.1	91	70-131		32.0	29.7	93		2	20	
m&p-Xylene	110	113	103	70-130		110	115	104		1	20	
o-Xylene	55.2	56.3	102	70-130		55.2	56.7	103		1	20	
4-Bromofluorobenzene(S)			89	80-120				88				

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VK20I09A: Method Blank (MB)

EPA TO-15

Run Time: VK20I09A.MB 09/09/2020 12:50 [VK20I09A]

Analyte	MB Result µg/m3	MB Qualifier	MB RDL µg/m3
Dichlorodifluoromethane	U		30
4-Bromofluorobenzene(S)	94		80-120

VK20I09A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20I09A.LCS: 09/09/2020 10:03 [VK20I09A] VK20I09A.LCSD: 09/09/2020 10:58 [VK20I09A]

Analyte	LCS Spike Amount µg/m3	LCS Result µg/m3	LCS Rec. %	Rec. Limits %	LCS Qualifier	LCSD Spike Amount µg/m3	LCSD Result µg/m3	LCSD Rec. %	LCSD Qualifier	RPD %	RPD Limits %	RPD Qualifier
Dichlorodifluoromethane	64.7	55.1	85	70-132		64.7	54.9	85		0	20	
4-Bromofluorobenzene(S)			92	80-120				92				

Definitions/ Qualifiers:

U: The analyte was not detected at or above the Reporting Limit (RL).
*****: Value reported is outside QC limits

Exception Summary:

Exceptions have been properly noted on reported results or affected samples have been scheduled for reanalysis when appropriate.

Report Generated By:



By Rikki Lott at 12:12 PM, Sep 14, 2020



Friday, December 18, 2020

Fibertec Project Number: 99383
Project Identification: RACER Lansing (30042872.00102) /30042872.00102
Submittal Date: 12/09/2020

Ms. Tiffany Linder
Arcadis U.S., Inc. - Novi
28550 Cabot Drive
Suite 500
Novi, MI 48377

Dear Ms. Linder,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

By Anthony Donnelly at 4:43 PM, Dec 18, 2020

For Daryl P. Strandbergh
Laboratory Director

Enclosures

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-001

Order: 99383
 Page: 2 of 16
 Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 1	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 10:07

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 99383-001A **Matrix: Air**
Description: SSMP-20-01 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	2.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 5. Fluorene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U	L-	µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 7. Naphthalene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 8. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 9. Pyrene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99383-001 **Matrix: Air**
Description: SSMP-20-01 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
2. Benzene	U		µg/m3	19	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
5. Bromoform	U		µg/m3	62	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
6. Bromomethane	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
12. Chloroethane	U		µg/m3	16	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
13. Chloroform	21		µg/m3	5.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
14. Chloromethane	U		µg/m3	12	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
20. Dichlorodifluoromethane	4200		µg/m3	30	70	12/15/20	VK20L15A	12/16/20	VK20L15A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-001

Order: 99383
 Page: 3 of 16
 Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 1	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 10:07

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **99383-001** Matrix: **Air**
 Method: **EPA TO-15** Description: **SSMP-20-01 (120920)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
25. trans-1,2-Dichloroethene	35		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
33. n-Heptane	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
35. n-Hexane	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
41. MTBE	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
43. Styrene	U		µg/m3	51	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
47. Toluene	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
51. Trichloroethene	37		µg/m3	1.6	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
59. o-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-001

Order: 99383
Page: 4 of 16
Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-01 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 1	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 10:07

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99383-001 **Matrix: Air**
Description: SSMP-20-01 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 60.Xylenes	U		µg/m3	100	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-002

Order: 99383
 Page: 5 of 16
 Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 2	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:22

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 99383-002A Matrix: Air
Description: SSMP-20-02 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	2.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 5. Fluorene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U	L-	µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 7. Naphthalene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 8. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 9. Pyrene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP

TO-15 (Bottle-Vac)

Aliquot ID: 99383-002 Matrix: Air
Description: SSMP-20-02 (120920)

Method: EPA TO-15

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
2. Benzene	U		µg/m3	19	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
5. Bromoform	U		µg/m3	62	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
6. Bromomethane	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
12. Chloroethane	U		µg/m3	16	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
14. Chloromethane	U		µg/m3	12	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
20. Dichlorodifluoromethane	9800		µg/m3	43	140	12/14/20	VK20L14A	12/15/20	VK20L14A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-002

Order: 99383
 Page: 6 of 16
 Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 2	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:22

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **99383-002** Matrix: **Air**
 Method: **EPA TO-15** Description: **SSMP-20-02 (120920)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
33. n-Heptane	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
35. n-Hexane	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
41. MTBE	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
43. Styrene	U		µg/m3	51	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
47. Toluene	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
51. Trichloroethene	43		µg/m3	1.6	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
59. o-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-002

Order: 99383
Page: 7 of 16
Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-02 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 2	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 11:22

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99383-002 **Matrix: Air**
Description: SSMP-20-02 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 60.Xylenes	U		µg/m3	100	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-003

Order: 99383
Page: 8 of 16
Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 3	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:21

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 99383-003A Matrix: Air
Description: SSMP-20-03 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	2.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP
‡ 5. Fluorene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U	L-	µg/m3	5.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP
‡ 7. Naphthalene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP
‡ 8. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP
‡ 9. Pyrene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/14/20	SG20L13A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99383-003 Matrix: Air
Description: SSMP-20-03 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
2. Benzene	U		µg/m3	19	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
5. Bromoform	U		µg/m3	62	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
6. Bromomethane	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
12. Chloroethane	U		µg/m3	16	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
14. Chloromethane	U		µg/m3	12	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
20. Dichlorodifluoromethane	4700		µg/m3	30	26	12/14/20	VK20L14A	12/15/20	VK20L14A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-003

Order: 99383
Page: 9 of 16
Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 3	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:21

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **99383-003** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-03 (120920)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
25. trans-1,2-Dichloroethene	28		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
33. n-Heptane	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
35. n-Hexane	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
41. MTBE	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
43. Styrene	U		µg/m3	51	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
47. Toluene	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
51. Trichloroethene	7.4		µg/m3	1.6	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
59. o-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-003

Order: 99383
Page: 10 of 16
Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-03 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 3	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 12:21

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99383-003 **Matrix: Air**
Description: SSMP-20-03 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 60.Xylenes	U		µg/m3	100	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-004

Order: 99383
 Page: 11 of 16
 Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 4	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:10

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified)

Aliquot ID: 99383-004A Matrix: Air
Description: SSMP-20-04 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 3. Anthracene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg/m3	2.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 5. Fluorene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U	L-	µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 7. Naphthalene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 8. Phenanthrene (SIM)	U		µg/m3	2.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP
‡ 9. Pyrene (SIM)	U		µg/m3	5.0	1.0	12/11/20	PS20L11F	12/17/20	SJ20L16A	GJP

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99383-004 Matrix: Air
Description: SSMP-20-04 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
2. Benzene	U		µg/m3	19	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
5. Bromoform	U		µg/m3	62	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
6. Bromomethane	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
12. Chloroethane	U		µg/m3	16	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
14. Chloromethane	U		µg/m3	12	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
20. Dichlorodifluoromethane	9000		µg/m3	54	170	12/14/20	VK20L14A	12/15/20	VK20L14A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-004

Order: 99383
Page: 12 of 16
Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 4	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:10

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **99383-004** Matrix: **Air**
Method: EPA TO-15 Description: **SSMP-20-04 (120920)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
33. n-Heptane	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
35. n-Hexane	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
41. MTBE	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
43. Styrene	U		µg/m3	51	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
47. Toluene	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
51. Trichloroethene	U		µg/m3	1.6	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
59. o-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-004

Order: 99383
 Page: 13 of 16
 Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SSMP-20-04 (120920)	Chain of Custody: 193403
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 4	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 13:10

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99383-004 **Matrix: Air**
Description: SSMP-20-04 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 60. Xylenes	U		µg/m3	100	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-005

Order: 99383
 Page: 14 of 16
 Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: Field Spike	Chain of Custody: N/A
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Field Spike: Tube	Collect Time: NA

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS Aliquot ID: **99383-005** Matrix: **Field Spike: Tube**
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified) Description: **Field Spike**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 1. Acenaphthene (SIM)	0.012		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 2. Acenaphthene (SIM) (Recovery)	118		%	0	1.0	NA	NA	12/13/20	NA	GJP
‡ 3. Acenaphthylene (SIM)	0.011		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 4. Acenaphthylene (SIM) (Recovery)	106		%	0	1.0	NA	NA	12/13/20	NA	GJP
‡ 5. Anthracene (SIM)	0.012		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 6. Anthracene (SIM) (Recovery)	115		%	0	1.0	NA	NA	12/13/20	NA	GJP
‡ 7. Benzo(a)anthracene (SIM)	0.0088		µg	0.0020	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 8. Benzo(a)anthracene (SIM) (Recovery)	88		%	0	1.0	NA	NA	12/13/20	NA	GJP
‡ 9. Fluorene (SIM)	0.0095		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 10. Fluorene (SIM) (Recovery)	95		%	0	1.0	NA	NA	12/13/20	NA	GJP
‡ 11. 2-Methylnaphthalene (SIM)	0.0084	L-	µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 12. 2-Methylnaphthalene (SIM) (Recovery)	84	L-	%	0	1.0	NA	NA	12/13/20	NA	GJP
‡ 13. Naphthalene (SIM)	0.0099		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 14. Naphthalene (SIM) (Recovery)	99		%	0	1.0	NA	NA	12/13/20	NA	GJP
‡ 15. Phenanthrene (SIM)	0.011		µg	0.0025	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 16. Phenanthrene (SIM) (Recovery)	115		%	0	1.0	NA	NA	12/13/20	NA	GJP
‡ 17. Pyrene (SIM)	0.012		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 18. Pyrene (SIM) (Recovery)	119		%	0	1.0	NA	NA	12/13/20	NA	GJP

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Analytical Laboratory Report
Laboratory Project Number: 99383
Laboratory Sample Number: 99383-006

Order: 99383
 Page: 15 of 16
 Date: 12/18/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: Field Blank	Chain of Custody: N/A
Client Project Name: RACER Lansing (30042872.00102)	Sample No:	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Blank: Tube	Collect Time: 09:45

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Polynuclear Aromatic Hydrocarbons - Modified for GC/MS Aliquot ID: **99383-006** Matrix: **Blank: Tube**
Method: NIOSH 5515 (Modified)/EPA TO-13A (Modified) Description: **Field Blank**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acenaphthene (SIM)	U		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 2. Acenaphthylene (SIM)	U		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 3. Anthracene (SIM)	U		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 4. Benzo(a)anthracene (SIM)	U		µg	0.0020	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 5. Fluorene (SIM)	U		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 6. 2-Methylnaphthalene (SIM)	U	L-	µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 7. Naphthalene (SIM)	U		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 8. Phenanthrene (SIM)	U		µg	0.0025	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP
‡ 9. Pyrene (SIM)	U		µg	0.0050	2.0	12/11/20	PS20L11F	12/13/20	SG20L13A	GJP

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Definitions/ Qualifiers:

- A:** Spike recovery or precision unusable due to dilution.
- B:** The analyte was detected in the associated method blank.
- E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J:** The concentration is an estimated value.
- M:** Modified Method
- U:** The analyte was not detected at or above the reporting limit.
- X:** Matrix Interference has resulted in a raised reporting limit or distorted result.
- W:** Results reported on a wet-weight basis.
- ***: Value reported is outside QC limits
- D:** The sample or extract was analyzed at a DF greater than 1.

Exception Summary:

- L-** : Recovery in the associated laboratory sample (LCS) exceeds the lower control limit. Results may be biased low.

Analysis Locations:

All analyses performed in Holt.



Accreditation Number(s):

T104704518-19-8 (TX)

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Plant 2

Client Name: <u>Arcadis</u>				MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	T0-15	T0-13A	PARAMETERS												Matrix Code			Deliverables			
Contact Person: <u>Tiffany Linder (810-225-1928)</u>								HOLD SAMPLE	S	Soil	GW	Ground Water														Level 2
Project Name/ Number: <u>RACER Lansing / 30042872.00102</u>									A	Air	SW	Surface Water														Level 3
Email distribution list: <u>Tiffany.Linder@arcadis.com</u>									O	Oil	WW	Waste Water														Level 4
Quote#									P	Wipe	X	Other: Specify														EDD
Purchase Order#									Remarks:																	
Date									Time				Sample #				Client Sample Descriptor									
12/9/20	1007	1	SSMP-20-01 (120920)				A	2	X	X																
12/9/20	1122	2	SSMP-20-02 (120920)				A	2	X	X																
12/9/20	1221	3	SSMP-20-03 (120920)				A	2	X	X																
12/9/20	1310	4	SSMP-20-04 (120920)				A	2	X	X																
Comments: <u>* Report the full COC lists</u>																										
Sampled/Relinquished By: <u>Austin Westhuis / am Westhuis / Arcadis</u>						Date/ Time: <u>12/9/20</u>						Received By: <u>Donald Richmond / Don Richmond / Arcadis</u>														
Relinquished By: <u>Donald Richmond / Don Richmond / Arcadis</u>						Date/ Time: <u>12/9/2020 15:42</u>						Received By: <u>[Signature]</u>														
Relinquished By:						Date/ Time:						Received By Laboratory:														
Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY												LAB USE ONLY														
<input type="checkbox"/> 1 bus. day <input type="checkbox"/> 2 bus. days <input type="checkbox"/> 3 bus. days <input type="checkbox"/> 4 bus. days <input checked="" type="checkbox"/> 5-7 bus. days (standard) Other (specify time/date requirement): _____												Fibertec project number: <u>99383</u> Temperature upon receipt at Lab: <u>Bottle was w/ sample 36°</u>														
Please see back for terms and conditions 1																										

Received By Lab
DEC 09 2020
Initials: CS

Received On Ice

Vapor Tube Sampling Field Worksheet

Client Name: *Arcadis* Sample Date: *12/9/20*
 Project Name/Number: *RACER Lansing / 30042872.00102* Sampled By: *Austin Westhuis*

Sample Identifiers				Field Calibration				
Time Collected	Sample Descriptor	Tube Lot Number	Pump Number	Analysis Requested	Field Pre Cal Rate (L/min)	Field Post Cal Weight (L/min)	Field Cal Average (L/min)	Total Time (minutes)
<i>0945</i>	Field Blank (Open ends, and then cap)	<i>12965</i>	<i>10003306</i>	<i>TO-13A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
<i>—</i>	Field Spike (carry to sample site, then return)	F.S. ID Number <i>8743501982 LOT 12</i>	<i>10003306</i>	<i>TO-13A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
<i>1032</i>	<i>SSMP-20-01 (120920)</i>	<i>8749501920 LOT 12965</i>	<i>10003306</i>	<i>TO-13A</i>	<i>0.2</i>	<i>0.2</i>	<i>0.2</i>	<i>10</i>
<i>1132</i>	<i>SSMP-20-02 (120920)</i>	<i>8749501884 LOT 12965</i>	<i>10003306</i>	<i>TO-13A</i>	<i>0.2</i>	<i>0.2</i>	<i>0.2</i>	<i>10</i>
<i>1228</i>	<i>SSMP-20-03 (120920)</i>	<i>8749501879 LOT 12965</i>	<i>10003306</i>	<i>TO-13A</i>	<i>0.2</i>	<i>0.2</i>	<i>0.2</i>	<i>10</i>
<i>1319</i>	<i>SSMP-20-04 (120920)</i>	<i>8749501876 LOT 12965</i>	<i>10003306</i>	<i>TO-13A</i>	<i>0.2</i>	<i>0.2</i>	<i>0.2</i>	<i>10</i>

Comments:

** Report the full COC list*

99383

* Maximum Vacuum during sampling should be 255mm H₂O compared to ambient.

* Collection should be a maximum 0.2 Liters /minute.

PS20L11F: Method Blank (MB)

EPA TO-13A (Modified)

Run Time: PS20L11F.MB 12/13/2020 18:01 [SG20L13A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/tube		µg/tube
Acenaphthene (SIM)	U		5.0
Acenaphthylene (SIM)	U		5.0
Anthracene (SIM)	U		5.0
Benzo(a)anthracene (SIM)	U		2.0
Fluorene (SIM)	U		5.0
2-Methylnaphthalene (SIM)	U		5.0
Naphthalene (SIM)	U		5.0
Phenanthrene (SIM)	U		2.0
Pyrene (SIM)	U		5.0
2-Fluorobiphenyl(S)	93		70-130
1-Fluoronaphthalene(S)	84		70-130
4-Terphenyl-d14(S)	77		70-130

PS20L11F: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-13A (Modified)

Run Time: PS20L11F.LCS: 12/13/2020 18:27 [SG20L13A] PS20L11F.LCSD: 12/13/2020 18:53 [SG20L13A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount	µg/tube	%	%	Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/tube	µg/tube				µg/tube	µg/tube					
Acenaphthene (SIM)	0.0200	0.0193	96	70-130		0.0200	0.0173	87		10	30	
Acenaphthylene (SIM)	0.0200	0.0179	89	70-130		0.0200	0.0162	81		9	30	
Anthracene (SIM)	0.0200	0.0208	104	70-130		0.0200	0.0196	98		6	30	
Benzo(a)anthracene (SIM)	0.0200	0.0185	92	70-130		0.0200	0.0238	119		26	30	
Fluorene (SIM)	0.0200	0.0177	89	70-130		0.0200	0.0148	74		18	30	
2-Methylnaphthalene (SIM)	0.0200	0.0148	74	70-130		0.0200	0.0129	64	*	14	30	
Naphthalene (SIM)	0.0200	0.0163	82	70-130		0.0200	0.0153	76		8	30	
Phenanthrene (SIM)	0.0200	0.0224	112	70-130		0.0200	0.0196	98		13	30	
Pyrene (SIM)	0.0200	0.0258	129	70-130		0.0200	0.0264	132	*	2	30	
2-Fluorobiphenyl(S)			115	70-130				99				
1-Fluoronaphthalene(S)			96	70-130				86				
4-Terphenyl-d14(S)			90	70-130				71				

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VK20L11A: Method Blank (MB)

EPA TO-15

Run Time: VK20L11A.MB 12/11/2020 13:41 [VK20L11A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Acetone	U		57
Benzene	U		19
Benzyl Chloride	U		6.2
Bromodichloromethane	U		8.0
Bromoform	U		62
Bromomethane	U		23
1,3-Butadiene	U		0.66
2-Butanone	U		35
Carbon Disulfide	U		37
Carbon Tetrachloride	U		7.5
Chlorobenzene	U		28
Chloroethane	U		16
Chloroform	U		5.9
Chloromethane	U		12
Cyclohexane	U		41
Dibromochloromethane	U		4.1
1,2-Dichlorobenzene	U		36
1,3-Dichlorobenzene	U		36
1,4-Dichlorobenzene	U		36
1,1-Dichloroethane	U		24
1,2-Dichloroethane	U		4.9
1,1-Dichloroethene	U		24
cis-1,2-Dichloroethene	U		24
trans-1,2-Dichloroethene	U		24
1,2-Dichloropropane	U		28
cis-1,3-Dichloropropene	U		27
trans-1,3-Dichloropropene	U		27
1,4-Dioxane	U		22
Ethyl Acetate	U		43
Ethylbenzene	U		52
Ethylene Dibromide	U		0.92
n-Heptane	U		49
Hexachlorobutadiene	U		5.1

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VK20L11A: Method Blank (MB)

EPA TO-15

Run Time: VK20L11A.MB 12/11/2020 13:41 [VK20L11A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
n-Hexane	U		42
2-Hexanone	U		49
Isopropanol	U		29
4-Methyl-2-pentanone	U		49
Methylene Chloride	U		42
2-Methylnaphthalene	U		140
MTBE	U		22
Naphthalene	U		28
Styrene	U		51
1,1,2,2-Tetrachloroethane	U		3.3
Tetrachloroethene	U		41
Tetrahydrofuran	U		3.5
Toluene	U		23
1,2,4-Trichlorobenzene	U		89
1,1,1-Trichloroethane	U		33
1,1,2-Trichloroethane	U		6.5
Trichloroethene	U		1.6
Trichlorofluoromethane	U		34
1,1,2-Trichlorotrifluoroethane	U		46
1,2,4-Trimethylbenzene	U		29
1,3,5-Trimethylbenzene	U		29
Vinyl Acetate	U		42
Vinyl Chloride	U		15
m&p-Xylene	U		52
o-Xylene	U		52
4-Bromofluorobenzene(S)	101		80-120

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VK20L11A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20L11A.LCS: 12/11/2020 10:53 [VK20L11A] VK20L11A.LCSD: 12/11/2020 11:48 [VK20L11A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Acetone	31.1	30.3	97	70-130		31.1	30.6	99		2	20	
Benzene	41.2	37.6	91	70-130		41.2	38.2	93		2	20	
Benzyl Chloride	65.7	74.0	113	70-150		65.7	74.5	113		0	20	
Bromodichloromethane	84.7	95.1	112	70-130		84.7	95.6	113		1	20	
Bromoform	134	141	106	70-138		134	142	106		0	20	
Bromomethane	51.7	50.0	97	70-133		51.7	49.1	95		2	20	
1,3-Butadiene	28.6	29.3	102	70-134		28.6	29.3	102		0	20	
2-Butanone	37.8	36.1	95	70-130		37.8	36.5	96		1	20	
Carbon Disulfide	38.8	37.7	97	70-130		38.8	37.9	98		1	20	
Carbon Tetrachloride	81.7	97.3	119	70-131		81.7	97.2	119		0	20	
Chlorobenzene	59.5	52.9	89	70-130		59.5	53.5	90		1	20	
Chloroethane	35.2	34.1	97	70-130		35.2	34.9	99		2	20	
Chloroform	64.0	68.0	106	70-130		64.0	67.7	106		0	20	
Chloromethane	26.9	26.2	97	70-130		26.9	26.7	99		2	20	
Cyclohexane	43.9	41.1	94	70-130		43.9	41.3	94		0	20	
Dibromochloromethane	112	115	102	70-135		112	116	104		2	20	
1,2-Dichlorobenzene	75.3	71.2	95	70-130		75.3	72.4	96		1	20	
1,3-Dichlorobenzene	76.0	72.2	95	70-131		76.0	72.6	96		1	20	
1,4-Dichlorobenzene	75.6	74.6	99	70-134		75.6	75.0	99		0	20	
1,1-Dichloroethane	51.4	49.6	96	70-130		51.4	49.9	97		1	20	
1,2-Dichloroethane	50.8	62.0	122	70-130		50.8	62.1	122		0	20	
1,1-Dichloroethene	51.0	54.9	108	70-133		51.0	54.8	107		1	20	
cis-1,2-Dichloroethene	50.4	52.1	103	70-130		50.4	52.5	104		1	20	
trans-1,2-Dichloroethene	50.8	53.1	105	70-130		50.8	53.3	105		0	20	
1,2-Dichloropropane	60.3	58.0	96	70-130		60.3	58.4	97		1	20	
cis-1,3-Dichloropropene	58.8	63.2	108	70-131		58.8	64.0	109		1	20	
trans-1,3-Dichloropropene	57.7	66.1	115	70-134		57.7	66.4	115		0	20	
1,4-Dioxane	46.6	47.8	103	70-130		46.6	48.5	104		1	20	
Ethyl Acetate	45.7	43.2	95	70-130		45.7	43.7	96		1	20	
Ethylbenzene	54.1	51.9	96	70-130		54.1	52.2	96		0	20	
Ethylene Dibromide	101	94.4	94	70-130		101	94.4	94		0	20	
n-Heptane	52.7	50.8	96	70-132		52.7	51.4	97		1	20	
Hexachlorobutadiene	135	130	97	70-134		135	132	98		1	20	

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VK20L11A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20L11A.LCS: 12/11/2020 10:53 [VK20L11A] VK20L11A.LCSD: 12/11/2020 11:48 [VK20L11A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
n-Hexane	44.6	42.7	96	70-130		44.6	42.2	95		1	20	
2-Hexanone	52.2	51.6	99	70-139		52.2	52.3	100		1	20	
Isopropanol	32.0	28.9	90	54-144		32.0	28.6	90		0	20	
4-Methyl-2-pentanone	52.3	55.2	106	70-130		52.3	55.8	107		1	20	
Methylene Chloride	43.8	41.3	94	70-132		43.8	41.7	95		1	20	
2-Methylnaphthalene	73.7	78.8	107	70-146		73.7	79.4	108		1	20	
MTBE	46.7	51.0	109	70-130		46.7	51.0	109		0	20	
Naphthalene	65.2	72.1	111	70-148		65.2	73.3	112		1	20	
Styrene	54.4	53.7	99	70-130		54.4	54.5	100		1	20	
1,1,2,2-Tetrachloroethane	88.3	80.1	91	70-130		88.3	81.8	93		2	20	
Tetrachloroethene	86.7	79.2	91	70-130		86.7	80.2	93		2	20	
Tetrahydrofuran	38.3	35.3	92	70-138		38.3	36.1	94		2	20	
Toluene	48.1	43.3	90	70-130		48.1	43.9	91		1	20	
1,2,4-Trichlorobenzene	93.0	105	112	70-140		93.0	106	114		2	20	
1,1,1-Trichloroethane	69.9	77.2	111	70-130		69.9	77.7	111		0	20	
1,1,2-Trichloroethane	72.7	65.0	89	70-130		72.7	65.9	91		2	20	
Trichloroethene	68.4	70.1	103	70-130		68.4	71.3	104		1	20	
Trichlorofluoromethane	71.3	73.5	103	70-132		71.3	73.0	102		1	20	
1,1,2-Trichlorotrifluoroethane	95.2	96.4	101	70-130		95.2	95.6	100		1	20	
1,2,4-Trimethylbenzene	61.2	61.7	101	70-132		61.2	62.5	102		1	20	
1,3,5-Trimethylbenzene	62.7	62.6	100	70-131		62.7	63.6	101		1	20	
Vinyl Acetate	46.4	46.9	101	70-131		46.4	47.7	103		2	20	
Vinyl Chloride	32.0	31.7	99	70-131		32.0	32.1	100		1	20	
m&p-Xylene	110	100	91	70-130		110	101	92		1	20	
o-Xylene	55.2	53.4	97	70-130		55.2	54.0	98		1	20	
4-Bromofluorobenzene(S)			96	80-120				95				

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

T: (517) 699-0345
T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584

VK20L14A: Method Blank (MB)

EPA TO-15

Run Time: VK20L14A.MB 12/14/2020 14:42 [VK20L14A]

Analyte	MB Result	MB Qualifier	MB RDL
Dichlorodifluoromethane	µg/m3		µg/m3
	U		30
4-Bromofluorobenzene(S)	100		80-120

VK20L14A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20L14A.LCS: 12/14/2020 11:55 [VK20L14A] VK20L14A.LCSD: 12/14/2020 12:51 [VK20L14A]

Analyte	LCS Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier	LCSD Spike Amount	LCSD Result	LCSD Rec.	RPD	RPD Limits	RPD Qualifier
Dichlorodifluoromethane	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%	%	%	
	64.7	77.7	120	70-132		64.7	77.4	120	0	20	
4-Bromofluorobenzene(S)			94	80-120				95			

VK20L15A: Method Blank (MB)

EPA TO-15

Run Time: VK20L15A.MB 12/15/2020 14:01 [VK20L15A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Dichlorodifluoromethane	U		30
4-Bromofluorobenzene(S)	100		80-120

VK20L15A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20L15A.LCS: 12/15/2020 11:15 [VK20L15A] VK20L15A.LCSD: 12/15/2020 12:09 [VK20L15A]

Analyte	LCS Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier	LCSD Spike Amount	LCSD Result	LCSD Rec.	RPD	RPD Limits	RPD Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%	%	%	
Dichlorodifluoromethane	64.7	75.9	117	70-132		64.7	76.9	119	2	20	
4-Bromofluorobenzene(S)			95	80-120				94			

Definitions/ Qualifiers:

U: The analyte was not detected at or above the Reporting Limit (RL).
***:** Value reported is outside QC limits

Exception Summary:

Exceptions have been properly noted on reported results or affected samples have been scheduled for reanalysis when appropriate.

Report Generated By:



By Sue Ricketts at 10:19 AM, Dec 21, 2020



Analytical Laboratory Report

Report ID: S20984.01(01)+QC01
Generated on 01/26/2021

Report to

Attention: Tiffany Linder
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Additional Contacts: Alex Villhauer, Kaitlyn Voet, Marina Samp

Report produced by

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

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

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

Report Summary

Lab Sample ID(s): S20984.01-S20984.02
Project: 30042872.00102 / RACER Lansing
Collected Date(s): 01/22/2021
Submitted Date/Time: 01/22/2021 16:50
Sampled by: Alex Villherey
P.O. #: 30042872.00102

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)
- QC Report (Pages 8-13)

Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

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

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

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

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

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

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

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

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
SM2540B	Standard Method 2540 B 2011
SW7471B	SW 846 Method 7471B Revision 2 February 2007



Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S20984.01	SB-A16-HU181R_0-1(012221)	Soil	01/22/21 11:50
S20984.02	SB-A16-HU181R_4-5(012221)	Soil	01/22/21 12:00



Analytical Laboratory Report

Lab Sample ID: S20984.01

Sample Tag: SB-A16-HU181R_0-1(012221)

Collected Date/Time: 01/22/2021 11:50

Matrix: Soil

COC Reference: 135022

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	SW7471B	01/26/21 10:40	JRH	

Inorganics

Method: SM2540B, Run Date: 01/22/21 17:00, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	78	1		%	1		

Metals

Method: SW7471B, Run Date: 01/26/21 14:24, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	0.294	0.050		mg/kg	74	7439-97-6	



Analytical Laboratory Report

Lab Sample ID: S20984.02

Sample Tag: SB-A16-HU181R_4-5(012221)

Collected Date/Time: 01/22/2021 12:00

Matrix: Soil

COC Reference: 135022

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	2.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Mercury Digestion	Completed	SW7471B	01/26/21 10:40	JRH	

Inorganics

Method: SM2540B, Run Date: 01/22/21 17:00, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	64	1		%	1		

Metals

Method: SW7471B, Run Date: 01/26/21 14:41, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Mercury	2.354	0.050		mg/kg	483	7439-97-6	



Quality Control Report

Report ID: S20984.01(01)+QC01
Generated on 01/26/2021

Report to
Attention: Tiffany Linder
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: 248-994-2272 FAX:

Report Summary

Lab Sample ID(s): S20984.01-S20984.02
Project: 30042872.00102 / RACER Lansing
Submitted Date/Time: 01/22/2021 16:50
Sampled by: Alex Villherey
P.O. #: 30042872.00102

QC Report Sections

Cover Page (Page 8)
Analysis Summary (Pages 9-10)
Prep Batch Summary (Page 11)
Batch QC Results (Pages 12-13)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S20984.01

Sample Tag: SB-AIG-HU181R_0-1(012221)

Collected Date/Time: 01/22/2021 11:50

Matrix: Soil

COC Reference: 135022

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	01/22/21 17:00	TS210122D	TS210122D	No	BLK/LCS/DUP
Metals						
Mercury	SW7471B	01/26/21 14:24	HG2-HG3-21-0126AHGD-012621-2		No	BLK/LCS/MS/MSD/DU

QC Report - Analysis Summary

Lab Sample ID: S20984.02

Sample Tag: SB-AIG-HU181R_4-5(012221)

Collected Date/Time: 01/22/2021 12:00

Matrix: Soil

COC Reference: 135022

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	01/22/21 17:00	TS210122D	TS210122D	No	BLK/LCS/DUP
<i>Metals</i>						
Mercury	SW7471B	01/26/21 14:41	HG2-HG3-21-0126AHGD-012621-2		No	BLK/LCS/MS/MSD/DU

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS210122D

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S20984.01	Total Solids	SM2540B	01/22/21 17:00	TS210122D
S20984.02	Total Solids	SM2540B	01/22/21 17:00	TS210122D

Metals, Prep Batch ID: HGD-012621-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S20984.01	Mercury	SW7471B	01/26/21 14:24	HG2-HG3-21-0126A
S20984.02	Mercury	SW7471B	01/26/21 14:41	HG2-HG3-21-0126A

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS210122D

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS210122D.LRB1

Run in Batch: TS210122D, Run Date: 01/22/2021 17:00, Prep Date: 01/22/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS210122D.LCS1

Run in Batch: TS210122D, Run Date: 01/22/2021 17:00, Prep Date: 01/22/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS210122D.DP1, Parent Sample ID: S20967.02

Run in Batch: TS210122D, Run Date: 01/22/2021 17:00, Prep Date: 01/22/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids	*	8	5

QC Report - Batch QC Results

Metals, Prep Batch ID: HGD-012621-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: HG2-HG3-21-0126A.049

Run in Batch: HG2-HG3-21-0126A, Run Date: 01/26/2021 14:17, Prep Date: 01/26/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Mercury		ND	0.03	ug/L

Laboratory Control Sample (LCS)

Lab Sample ID: HG2-HG3-21-0126A.048

Run in Batch: HG2-HG3-21-0126A, Run Date: 01/26/2021 14:15, Prep Date: 01/26/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		96	85	115

Matrix Spike (MS)

Lab Sample ID: HG2-HG3-21-0126A.054, Parent Sample ID: S20984.02

Run in Batch: HG2-HG3-21-0126A, Run Date: 01/26/2021 14:29, Prep Date: 01/26/2021, Matrix: Soil, Dilution: 98

Analyte	Flags	% Rec	LCL	UCL
Mercury	*	-46	70	130

Matrix Spike (MS)

Lab Sample ID: HG2-HG3-21-0126A.061, Parent Sample ID: S20984.02

Run in Batch: HG2-HG3-21-0126A, Run Date: 01/26/2021 14:46, Prep Date: 01/26/2021, Matrix: Soil, Dilution: 483

Analyte	Flags	% Rec	LCL	UCL
Mercury		113	70	130

Matrix Spike Duplicate (MSD)

Lab Sample ID: HG2-HG3-21-0126A.055, Parent Sample ID: HG2-HG3-21-0126A.054

Run in Batch: HG2-HG3-21-0126A, Run Date: 01/26/2021 14:31, Prep Date: 01/26/2021, Matrix: Soil, Dilution: 99

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury	*	169	70	130	23	20

Duplicate (DUP)

Lab Sample ID: HG2-HG3-21-0126A.051, Parent Sample ID: S20729.01

Run in Batch: HG2-HG3-21-0126A, Run Date: 01/26/2021 14:21, Prep Date: 01/26/2021, Matrix: Soil, Dilution: 3125

Analyte	Flags	RPD	RPD CL
Mercury		0	20

Merit Laboratories Login Checklist

Lab Set ID:S20984

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30042872.00102 / RACER Lansing

Submitted:01/22/2021 16:50 Login User: REJ

Attention: Tiffany Linder

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272

FAX:

Email: tiffany.linder@arcadis-us.com

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

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 2.7 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

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

Client Review By: _____ Date: _____



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

C.O.C. PAGE # 1 OF 1

135022

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME *Randy Christensen #11 Tiffany Linder*
 COMPANY *Arcadis*
 ADDRESS *28550 Cabot Dr., Suite 500*
 CITY *Novi* STATE *MI* ZIP CODE *48377*
 PHONE NO. *248-994-2240* FAX NO. *-* PO NO. *30042872.00102*
 E-MAIL ADDRESS *Tiffany.Linder@arcadis.com* QUOTE NO.

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

PROJECT NO./NAME *30042872.00102 / RACER Lansing* SAMPLER(S) - PLEASE PRINT/SIGN NAME *Alex Villanar*
 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 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 2021		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
<i>20984-01</i>	<i>1/22</i>	<i>11:50</i>	<i>SB-AIG-HU181R_0-1(012221)</i>	<i>S</i>	<i>1</i>	<i>X</i>						
<i>.02</i>	<i>1/22</i>	<i>12:00</i>	<i>SB-AIG-HU181R_4-5(012221)</i>	<i>S</i>	<i>1</i>	<i>X</i>						

Hg by method 747

RELINQUISHED BY: *[Signature]* / Arcadis Sampler DATE *1/22/21* TIME *11:50*
 RECEIVED BY: *[Signature]* Merit Labs DATE *1/22/21* TIME
 RELINQUISHED BY: *[Signature]* DATE *1/22/21* TIME *10:50*
 RECEIVED BY: *[Signature]* DATE *1/22/21* TIME *10:50*

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

SEAL NO	SEAL INTACT YES <input type="checkbox"/> NO <input type="checkbox"/>	INITIALS	NOTES <i>2.7</i>	TEMP ON ARRIVAL _____
SEAL NO	SEAL INTACT YES <input type="checkbox"/> NO <input type="checkbox"/>	INITIALS		



Tuesday, February 25, 2020

Fibertec Project Number: 95052
Project Identification: RACER Lansing (30042872.01020) /30042872.01020
Submittal Date: 02/17/2020

Ms. Tiffany Linder
Arcadis U.S., Inc. - Novi
28550 Cabot Drive
Suite 500
Novi, MI 48377

Dear Ms. Linder,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

A handwritten signature in cursive script that reads "Stephanie Wallace".

By Stephanie Wallace at 9:58 AM, Feb 25, 2020

For Daryl P. Strandbergh
Laboratory Director

Enclosures

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

T: (517) 699-0345
T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584



Analytical Laboratory Report
Laboratory Project Number: 95052
Laboratory Sample Number: 95052-001

Order: 95052
 Page: 2 of 7
 Date: 02/25/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SB-A5.8-NM324 (1-2)	Chain of Custody: 184589
Client Project Name: RACER Lansing (30042872.01020)	Sample No:	Collect Date: 02/17/20
Client Project No: 30042872.01020	Sample Matrix: Soil/Solid	Collect Time: 13:40

Sample Comments: **Soil results have been calculated and reported on a dry weight basis unless otherwise noted.**

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Water (Moisture) Content Dried at 105 ± 5°C Aliquot ID: **95052-001** Matrix: **Soil/Solid**
Method: ASTM D2216-10 Description: **SB-A5.8-NM324 (1-2)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 1. Percent Moisture (Water Content)	14		%	1	1.0	02/19/20	MC200219	02/20/20	MC200219	DB

Mercury by CVAAS Aliquot ID: **95052-001** Matrix: **Soil/Solid**
Method: EPA 7471B Description: **SB-A5.8-NM324 (1-2)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
1. Mercury	U	V+	µg/kg	50	8.7	02/19/20	PM20B19B	02/19/20	M720B19A	JLH

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Holt, MI 48842
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 T: (231) 775-8368

F: (517) 699-0388
 F: (810) 220-3311
 F: (231) 775-8584



Analytical Laboratory Report
Laboratory Project Number: 95052
Laboratory Sample Number: 95052-002

Order: 95052
 Page: 3 of 7
 Date: 02/25/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SB-A5.8-NM324 (5-6)	Chain of Custody: 184589
Client Project Name: RACER Lansing (30042872.01020)	Sample No:	Collect Date: 02/17/20
Client Project No: 30042872.01020	Sample Matrix: Soil/Solid	Collect Time: 13:45

Sample Comments: **Soil results have been calculated and reported on a dry weight basis unless otherwise noted.**

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Water (Moisture) Content Dried at 105 ± 5°C Aliquot ID: **95052-002** Matrix: **Soil/Solid**
Method: ASTM D2216-10 Description: **SB-A5.8-NM324 (5-6)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 1. Percent Moisture (Water Content)	16		%	1	1.0	02/19/20	MC200219	02/20/20	MC200219	DB

Mercury by CVAAS Aliquot ID: **95052-002** Matrix: **Soil/Solid**
Method: EPA 7471B Description: **SB-A5.8-NM324 (5-6)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
1. Mercury	U	V+	µg/kg	50	8.7	02/19/20	PM20B19B	02/19/20	M720B19A	JLH

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Analytical Laboratory Report
Laboratory Project Number: 95052
Laboratory Sample Number: 95052-003

Order: 95052
 Page: 4 of 7
 Date: 02/25/20

Client Identification: **Arcadis U.S., Inc. - Novi** Sample Description: **SB-A5.8-NM321 (1-2)_02172020** Chain of Custody: **184589**
 Client Project Name: **RACER Lansing (30042872.01020)** Sample No: Collect Date: **02/17/20**
 Client Project No: **30042872.01020** Sample Matrix: **Soil/Solid** Collect Time: **14:00**

Sample Comments: **Soil results have been calculated and reported on a dry weight basis unless otherwise noted.**

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Water (Moisture) Content Dried at 105 ± 5°C Aliquot ID: **95052-003** Matrix: **Soil/Solid**
Method: ASTM D2216-10 Description: **SB-A5.8-NM321 (1-2)_02172020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 1. Percent Moisture (Water Content)	18		%	1	1.0	02/19/20	MC200219	02/20/20	MC200219	DB

Mercury by CVAAS Aliquot ID: **95052-003** Matrix: **Soil/Solid**
Method: EPA 7471B Description: **SB-A5.8-NM321 (1-2)_02172020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
1. Mercury	U	V+	µg/kg	50	8.5	02/19/20	PM20B19B	02/19/20	M720B19A	JLH

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Analytical Laboratory Report
Laboratory Project Number: 95052
Laboratory Sample Number: 95052-004

Order: 95052
 Page: 5 of 7
 Date: 02/25/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: Dup-01_02172020	Chain of Custody: 184589
Client Project Name: RACER Lansing (30042872.01020)	Sample No:	Collect Date: 02/17/20
Client Project No: 30042872.01020	Sample Matrix: Soil/Solid	Collect Time: NA

Sample Comments: **Soil results have been calculated and reported on a dry weight basis unless otherwise noted.**

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Water (Moisture) Content Dried at 105 ± 5°C Aliquot ID: **95052-004** Matrix: **Soil/Solid**
Method: ASTM D2216-10 Description: **Dup-01_02172020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 1. Percent Moisture (Water Content)	17		%	1	1.0	02/19/20	MC200219	02/20/20	MC200219	DB

Mercury by CVAAS Aliquot ID: **95052-004** Matrix: **Soil/Solid**
Method: EPA 7471B Description: **Dup-01_02172020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
1. Mercury	U		µg/kg	50	9.1	02/19/20	PM20B19B	02/20/20	M720B20A	JLH

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 F: (231) 775-8584



Analytical Laboratory Report
Laboratory Project Number: 95052
Laboratory Sample Number: 95052-005

Order: 95052
 Page: 6 of 7
 Date: 02/25/20

Client Identification: **Arcadis U.S., Inc. - Novi** Sample Description: **SB-A5.8-NM321 (5-6)_02172020** Chain of Custody: **184589**
 Client Project Name: **RACER Lansing (30042872.01020)** Sample No: Collect Date: **02/17/20**
 Client Project No: **30042872.01020** Sample Matrix: **Soil/Solid** Collect Time: **14:05**

Sample Comments: **Soil results have been calculated and reported on a dry weight basis unless otherwise noted.**

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

Water (Moisture) Content Dried at 105 ± 5°C Aliquot ID: **95052-005** Matrix: **Soil/Solid**
Method: ASTM D2216-10 Description: **SB-A5.8-NM321 (5-6)_02172020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
‡ 1. Percent Moisture (Water Content)	13		%	1	1.0	02/19/20	MC200219	02/20/20	MC200219	DB

Mercury by CVAAS Aliquot ID: **95052-005** Matrix: **Soil/Solid**
Method: EPA 7471B Description: **SB-A5.8-NM321 (5-6)_02172020**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		Init.
						P. Date	P. Batch	A. Date	A. Batch	
1. Mercury	U	V+	µg/kg	50	8.7	02/19/20	PM20B19B	02/19/20	M720B19A	JLH

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 F: (231) 775-8584

Definitions/ Qualifiers:

- A:** Spike recovery or precision unusable due to dilution.
- B:** The analyte was detected in the associated method blank.
- E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J:** The concentration is an estimated value.
- M:** Modified Method
- U:** The analyte was not detected at or above the reporting limit.
- X:** Matrix Interference has resulted in a raised reporting limit or distorted result.
- W:** Results reported on a wet-weight basis.
- *:** Value reported is outside QC limits

Exception Summary:

- V+** : Recovery in the associated continuing calibration verification sample (CCV) exceeds the upper control limit. Results may be biased high.

Analysis Locations:

All analyses performed in Holt.



Accreditation Number(s):

T104704518-19-8 (TX)

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

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F: (231) 775-8584

PM20B19B: Method Blank (MB)

EPA 7471B

Run Time: PM20B19B.MB 02/19/2020 12:21 [M720B19A]

Analyte	MB Result	MB Qualifier	MB RDL
Mercury	µg/kg U		µg/kg 50

PM20B19B: Laboratory Control Sample (LCS)

EPA 7471B

Run Time: PM20B19B.LCS: 02/19/2020 12:23 [M720B19A]

Analyte	LCS Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury	µg/kg 200	µg/kg 205	% 103	% 85-115	


Definitions/ Qualifiers:

U: The analyte was not detected at or above the Reporting Limit (RL).
***:** Value reported is outside QC limits

Exception Summary:

Exceptions have been properly noted on reported results or affected samples have been scheduled for reanalysis when appropriate.

Report Generated By:



By Stephanie Wallace at 10:00 AM, Feb 25, 2020

Client Name: <i>Arcadis of Michigan, LLC</i>				MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	<i>Mercury - 7471</i>	PARAMETERS												Matrix Code		Deliverables	
Contact Person: <i>Tiffany Linder</i>							HOLD SAMPLE	S	Soil	GW	Ground Water									Level 2		
Project Name/ Number: <i>RACER Lansing / 30042872.01020</i>								A	Air	SW	Surface Water									Level 3		
Email distribution list: <i>Tiffany.Linder@arcadis.com Patrick.Curry@arcadis.com</i>								O	Oil	WW	Waste Water									Level 4		
Quote#								P	Wipe	X	Other: Specify									EDD		
Purchase Order# <i>30042872.01020</i>								Remarks:														
Date				Time				Sample #				Client Sample Descriptor										
<i>2/17/20</i>				<i>1340</i>								<i>SB-A5.8-NM 324(1-2)</i>				<i>S 1 X</i>						
<i>2/17/20</i>				<i>1345</i>								<i>SB-A5.8-NM 324(5-6)</i>				<i>S 1 X</i>						
<i>2/17/20</i>				<i>1400</i>								<i>SB-A5.8-NM 321(1-2)-02172020</i>				<i>S 1 X</i>						
<i>2/17/20</i>				<i>---</i>								<i>Dup-01-02172020</i>				<i>S 1 X</i>						
<i>2/17/20</i>				<i>1405</i>								<i>SB-A5.8-NM 321(5-6)-02172020</i>				<i>S 1 X</i>						
Comments:																						
Sampled/Relinquished By: <i>Austin Westhuis / Austin Westhuis / Arcadis</i>						Date/ Time <i>2/17/20 1525</i>						Received By: <i>M. Weaver / Melissa Weaver / Arcadis 2/17/20 1525</i>										
Relinquished By: <i>M. Weaver / Melissa Weaver / Arcadis</i>						Date/ Time <i>2/17/20 1556</i>						Received By: <i>[Signature]</i>										
Relinquished By:						Date/ Time						Received By Laboratory:										
<p align="center">Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY</p> <p> <input type="checkbox"/> 1 bus. day <input type="checkbox"/> 2 bus. days <input type="checkbox"/> 3 bus. days <input type="checkbox"/> 4 bus. days <input checked="" type="checkbox"/> 5-7 bus. days (standard) Other (specify time/date requirement): _____ </p>												<p align="center">LAB USE ONLY</p> <p>Fibertec project number: <i>95052</i></p> <p>Temperature upon receipt at Lab: <i>4.8</i></p>										
Please see back for terms and conditions																						

Received By Lab
FEB 17 2020
Initials: _____

Received
On Ice



Analytical Laboratory Report

Report ID: S12004.01(01)
Generated on 02/24/2020

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX: 248-994-2241
Email: tiffany.linder@arcadis-us.com

Additional Contacts: Patrick Curry

Report produced by

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

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

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

Report Summary

Lab Sample ID(s): S12004.01-S12004.05
Project: 30042872.01020 / RACER Lansing
Collected Date(s): 02/17/2020 - 02/18/2020
Submitted Date/Time: 02/18/2020 15:55
Sampled by: Austin Westhuis
P.O. #: 30042872.01020

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

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

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

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

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

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

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

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

Report Narrative

There is no additional narrative for this analytical report



Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW3510C	SW 846 Method 3510C Revision 3 December 1996
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Analytical Laboratory Report

Sample Summary (5 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S12004.01	VAP-A5.7-MB257_02172020	Groundwater	02/17/20 15:00
S12004.02	MW-13-36R_02172020	Groundwater	02/17/20 16:10
S12004.03	MW-13-35_02182020	Groundwater	02/18/20 15:30
S12004.04	Dup-01_02172020	Groundwater	02/17/20 00:01
S12004.05	Trip Blank	Water	02/17/20 00:01



Analytical Laboratory Report

Lab Sample ID: S12004.01

Sample Tag: VAP-A5.7-MB257_02172020

Collected Date/Time: 02/17/2020 15:00

Matrix: Groundwater

COC Reference: 133434

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/20/20 12:00	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/19/20 16:12, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Diethyl ether	Not detected	10		ug/L	1	60-29-7		
Acetone	Not detected	50		ug/L	1	67-64-1		
Methyl iodide	Not detected	1		ug/L	1	74-88-4		
Carbon disulfide	Not detected	5		ug/L	1	75-15-0		
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4		
Acrylonitrile	Not detected	2		ug/L	1	107-13-1		
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3		200,000
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8		
Chloromethane	Not detected	5		ug/L	1	74-87-3		
Vinyl chloride	3	1		ug/L	1	75-01-4		200
Bromomethane	Not detected	5		ug/L	1	74-83-9		
Chloroethane	Not detected	5		ug/L	1	75-00-3		
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4		
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4		700
Methylene chloride	Not detected	5		ug/L	1	75-09-2		
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5		
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3		
cis-1,2-Dichloroethene	6	1		ug/L	1	156-59-2		
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9		
Chloroform	Not detected	1		ug/L	1	67-66-3		6,000
Bromochloromethane	Not detected	1		ug/L	1	74-97-5		
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6		
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1		
2-Hexanone	Not detected	50		ug/L	1	591-78-6		
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5		500
Benzene	Not detected	1		ug/L	1	71-43-2		500
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2		500
Trichloroethene	1	1		ug/L	1	79-01-6		500
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5		
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4		
Dibromomethane	Not detected	5		ug/L	1	74-95-3		
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5		
Toluene	Not detected	1		ug/L	1	108-88-3		
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6		
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5		
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4		700
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6		



Analytical Laboratory Report

Lab Sample ID: S12004.01 (continued)

Sample Tag: VAP-A5.7-MB257_02172020

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/19/20 16:12, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1		
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4		
Chlorobenzene	Not detected	1		ug/L	1	108-90-7		100,000
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6		
Ethylbenzene	Not detected	1		ug/L	1	100-41-4		
p,m-Xylene*	Not detected	2		ug/L	1			
o-Xylene	Not detected	1		ug/L	1	95-47-6		
Styrene	Not detected	1		ug/L	1	100-42-5		
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8		
Bromoform	Not detected	1		ug/L	1	75-25-2		
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5		
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4		
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1		
Bromobenzene	Not detected	1		ug/L	1	108-86-1		
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8		
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6		
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6		
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8		
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6		
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1		
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7		7,500
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1		
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8		
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8		
Hexachloroethane	Not detected	5		ug/L	1	67-72-1		3,000
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8		
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1		
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6		
Naphthalene	Not detected	5		ug/L	1	91-20-3		
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6		



Analytical Laboratory Report

Lab Sample ID: S12004.02

Sample Tag: MW-13-36R_02172020

Collected Date/Time: 02/17/2020 16:10

Matrix: Groundwater

COC Reference: 133434

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Amber	None	Yes	5.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction	Completed	SW3510C	02/20/20 15:00	BPS	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/22/20 00:14, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Acenaphthene	Not detected	5		ug/L	2	83-32-9		
Acenaphthylene	Not detected	5		ug/L	2	208-96-8		
Anthracene	Not detected	5		ug/L	2	120-12-7		
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3		
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2		
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9		
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2		
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8		
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1		
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4		
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1		
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7		
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3		
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7		
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8		
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7		
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7		
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8		
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3		
Chrysene	Not detected	1		ug/L	2	218-01-9		
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL		200,000
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7		200,000
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3		
Dibenzofuran	Not detected	4		ug/L	2	132-64-9		
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2		
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1		
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1		
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7		7,500
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1		
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2		
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2		
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9		
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3		
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1		
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5		
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2		130
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2		



Analytical Laboratory Report

Lab Sample ID: S12004.02 (continued)

Sample Tag: MW-13-36R_02172020

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/22/20 00:14, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7		
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0		
Fluoranthene	Not detected	1		ug/L	2	206-44-0		
Fluorene	Not detected	5		ug/L	2	86-73-7		
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1		130
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3		500
Hexachlorocyclopentadiene	Not detected	5		ug/L	2	77-47-4		
Hexachloroethane	Not detected	5		ug/L	2	67-72-1		3,000
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5		
Isophorone	Not detected	5		ug/L	2	78-59-1		
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6		
Naphthalene	Not detected	5		ug/L	2	91-20-3		
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4		
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2		
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6		
Nitrobenzene	Not detected	5		ug/L	2	98-95-3		2,000
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5		
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7		
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6		
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7		
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5		100,000
Phenanthrene	Not detected	2		ug/L	2	85-01-8		
Phenol	Not detected	5		ug/L	2	108-95-2		
Pyrene	Not detected	5		ug/L	2	129-00-0		
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1		
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4		400,000
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2		2,000



Analytical Laboratory Report

Lab Sample ID: S12004.03

Sample Tag: MW-13-35_02182020

Collected Date/Time: 02/18/2020 15:30

Matrix: Groundwater

COC Reference: 133434

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Amber	None	Yes	5.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction	Completed	SW3510C	02/20/20 15:00	BPS	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/22/20 00:44, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Acenaphthene	Not detected	5		ug/L	2	83-32-9		
Acenaphthylene	Not detected	5		ug/L	2	208-96-8		
Anthracene	Not detected	5		ug/L	2	120-12-7		
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3		
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2		
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9		
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2		
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8		
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1		
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4		
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1		
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7		
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3		
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7		
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8		
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7		
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7		
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8		
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3		
Chrysene	Not detected	1		ug/L	2	218-01-9		
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL		200,000
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7		200,000
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3		
Dibenzofuran	Not detected	4		ug/L	2	132-64-9		
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2		
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1		
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1		
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7		7,500
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1		
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2		
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2		
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9		
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3		
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1		
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5		
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2		130
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2		



Analytical Laboratory Report

Lab Sample ID: S12004.03 (continued)

Sample Tag: MW-13-35_02182020

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/22/20 00:44, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7		
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0		
Fluoranthene	Not detected	1		ug/L	2	206-44-0		
Fluorene	Not detected	5		ug/L	2	86-73-7		
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1		130
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3		500
Hexachlorocyclopentadiene	Not detected	5		ug/L	2	77-47-4		
Hexachloroethane	Not detected	5		ug/L	2	67-72-1		3,000
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5		
Isophorone	Not detected	5		ug/L	2	78-59-1		
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6		
Naphthalene	Not detected	5		ug/L	2	91-20-3		
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4		
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2		
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6		
Nitrobenzene	Not detected	5		ug/L	2	98-95-3		2,000
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5		
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7		
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6		
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7		
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5		100,000
Phenanthrene	Not detected	2		ug/L	2	85-01-8		
Phenol	Not detected	5		ug/L	2	108-95-2		
Pyrene	Not detected	5		ug/L	2	129-00-0		
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1		
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4		400,000
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2		2,000



Analytical Laboratory Report

Lab Sample ID: S12004.04

Sample Tag: Dup-01_02172020

Collected Date/Time: 02/17/2020 00:01

Matrix: Groundwater

COC Reference: 133434

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Amber	None	Yes	5.2	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction	Completed	SW3510C	02/20/20 15:00	BPS	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/22/20 01:13, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Acenaphthene	Not detected	5		ug/L	2	83-32-9		
Acenaphthylene	Not detected	5		ug/L	2	208-96-8		
Anthracene	Not detected	5		ug/L	2	120-12-7		
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3		
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2		
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9		
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2		
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8		
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1		
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4		
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1		
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7		
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3		
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7		
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8		
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7		
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7		
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8		
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3		
Chrysene	Not detected	1		ug/L	2	218-01-9		
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL		200,000
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7		200,000
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3		
Dibenzofuran	Not detected	4		ug/L	2	132-64-9		
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2		
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1		
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1		
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7		7,500
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1		
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2		
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2		
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9		
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3		
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1		
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5		
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2		130
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2		



Analytical Laboratory Report

Lab Sample ID: S12004.04 (continued)

Sample Tag: Dup-01_02172020

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/22/20 01:13, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7		
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0		
Fluoranthene	Not detected	1		ug/L	2	206-44-0		
Fluorene	Not detected	5		ug/L	2	86-73-7		
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1		130
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3		500
Hexachlorocyclopentadiene	Not detected	5		ug/L	2	77-47-4		
Hexachloroethane	Not detected	5		ug/L	2	67-72-1		3,000
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5		
Isophorone	Not detected	5		ug/L	2	78-59-1		
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6		
Naphthalene	Not detected	5		ug/L	2	91-20-3		
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4		
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2		
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6		
Nitrobenzene	Not detected	5		ug/L	2	98-95-3		2,000
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5		
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7		
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6		
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7		
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5		100,000
Phenanthrene	Not detected	2		ug/L	2	85-01-8		
Phenol	Not detected	5		ug/L	2	108-95-2		
Pyrene	Not detected	5		ug/L	2	129-00-0		
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1		
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4		400,000
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2		2,000



Analytical Laboratory Report

Lab Sample ID: S12004.05

Sample Tag: Trip Blank

Collected Date/Time: 02/17/2020 00:01

Matrix: Water

COC Reference: 133434

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/20/20 12:00	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/19/20 15:33, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Diethyl ether	Not detected	10		ug/L	1	60-29-7		
Acetone	Not detected	50		ug/L	1	67-64-1		
Methyl iodide	Not detected	1		ug/L	1	74-88-4		
Carbon disulfide	Not detected	5		ug/L	1	75-15-0		
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4		
Acrylonitrile	Not detected	2		ug/L	1	107-13-1		
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3		200,000
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8		
Chloromethane	Not detected	5		ug/L	1	74-87-3		
Vinyl chloride	Not detected	1		ug/L	1	75-01-4		200
Bromomethane	Not detected	5		ug/L	1	74-83-9		
Chloroethane	Not detected	5		ug/L	1	75-00-3		
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4		
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4		700
Methylene chloride	Not detected	5		ug/L	1	75-09-2		
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5		
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3		
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2		
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9		
Chloroform	Not detected	1		ug/L	1	67-66-3		6,000
Bromochloromethane	Not detected	1		ug/L	1	74-97-5		
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6		
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1		
2-Hexanone	Not detected	50		ug/L	1	591-78-6		
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5		500
Benzene	Not detected	1		ug/L	1	71-43-2		500
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2		500
Trichloroethene	Not detected	1		ug/L	1	79-01-6		500
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5		
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4		
Dibromomethane	Not detected	5		ug/L	1	74-95-3		
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5		
Toluene	Not detected	1		ug/L	1	108-88-3		
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6		
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5		
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4		700
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6		



Analytical Laboratory Report

Lab Sample ID: S12004.05 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/19/20 15:33, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1		
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4		
Chlorobenzene	Not detected	1		ug/L	1	108-90-7		100,000
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6		
Ethylbenzene	Not detected	1		ug/L	1	100-41-4		
p,m-Xylene*	Not detected	2		ug/L	1			
o-Xylene	Not detected	1		ug/L	1	95-47-6		
Styrene	Not detected	1		ug/L	1	100-42-5		
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8		
Bromoform	Not detected	1		ug/L	1	75-25-2		
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5		
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4		
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1		
Bromobenzene	Not detected	1		ug/L	1	108-86-1		
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8		
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6		
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6		
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8		
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6		
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1		
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7		7,500
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1		
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8		
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8		
Hexachloroethane	Not detected	5		ug/L	1	67-72-1		3,000
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8		
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1		
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6		
Naphthalene	Not detected	5		ug/L	1	91-20-3		
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6		

Merit Laboratories Login Checklist

Lab Set ID:S12004

Attention: Tiffany Linder

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30042872.01020 / RACER Lansing

Submitted:02/18/2020 15:55 Login User: MMC

Phone: 248-994-2272 FAX:248-994-2241

Email: tiffany.linder@arcadis-us.com

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

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.2 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|---|
| 06. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out Trip Blank not listed |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

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

Client Review By: _____ Date: _____



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

C.O.C. PAGE # 1 OF 1

133434

REPORT TO **CHAIN OF CUSTODY RECORD** **INVOICE TO**

CONTACT NAME
Tiffany Linder

COMPANY
Arcadis of Michigan, LLC

ADDRESS
28550 Cabot Drive, Suite 500

CITY
Novi STATE
MI ZIP CODE
48377

PHONE NO.
810-225-1928 FAX NO.
248-994-2241 P.O. NO.
30042872.01020

E-MAIL ADDRESS
Tiffany.Linder@arcadis.com QUOTE NO.

CONTACT NAME SAME

COMPANY

ADDRESS

CITY STATE ZIP CODE

PHONE NO. E-MAIL ADDRESS

PROJECT NO./NAME
30042872.01020 / PCEER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME
Austin Westhuis / [Signature]

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		NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
VOCs - 8260	SVOCs - 8270							
X			3					
	X							
	X							
	X							

Certifications
 OHIO VAP Drinking Water
 DoD NPDES

Project Locations
 Detroit New York
 Other *MF*

Special Instructions

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
<i>12004.01</i>	<i>2/17/20</i>	<i>1500</i>	<i>VAP-A5.7-MB257-02172020</i>	<i>GW</i>	<i>3</i>		<i>3</i>					
<i>.02</i>	<i>2/17/20</i>	<i>1610</i>	<i>MW-13-36R-02172020</i>	<i>GW</i>	<i>2</i>		<i>2</i>					
<i>.03</i>	<i>2/18/20</i>	<i>1530</i>	<i>MW-13-35-02182020</i>	<i>GW</i>	<i>2</i>		<i>2</i>					
<i>.04</i>	<i>2/17/20</i>	<i>—</i>	<i>Dup-01-02172020</i>	<i>GW</i>	<i>2</i>		<i>2</i>					
<i>.05</i>												

RELINQUISHED BY: SIGNATURE/ORGANIZATION *Austin Westhuis / Arcadis* Sampler DATE *2/18/20* TIME *1555*

RECEIVED BY: SIGNATURE/ORGANIZATION *M. Chilcote* DATE *2/18/2020* TIME *1555*

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME

RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME

RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME

SEAL NO. SEAL INTACT YES NO INITIALS

SEAL NO. SEAL INTACT YES NO INITIALS

NOTES: TEMP. ON ARRIVAL *5.2*



Analytical Laboratory Report

Report ID: S17055.01(01)
Generated on 09/08/2020

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Additional Contacts: Alex Villhauer, Marina Samp, Kaitlyn Voet

Report produced by

Merit Laboratories, Inc.
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Phone: (517) 332-0167 FAX: (517) 332-6333

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

Report Summary

Lab Sample ID(s): S17055.01-S17055.04
Project: 30042872 / RACER Lansing Plant 6
Collected Date(s): 08/31/2020
Submitted Date/Time: 08/31/2020 18:45
Sampled by: Austin Westhuis
P.O. #: 30042872

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

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

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

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

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

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

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

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

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
SW3510C	SW 846 Method 3510C Revision 3 December 1996
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Analytical Laboratory Report

Sample Summary (4 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S17055.01	MW-13-36R_083120	Groundwater	08/31/20 14:20
S17055.02	Dup-02_083120	Groundwater	08/31/20 00:01
S17055.03	MW-13-35_083120	Groundwater	08/31/20 16:50
S17055.04	Trip Blank	Groundwater	08/31/20 00:01



Analytical Laboratory Report

Lab Sample ID: S17055.01

Sample Tag: MW-13-36R_083120

Collected Date/Time: 08/31/2020 14:20

Matrix: Groundwater

COC Reference: 127303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Amber	None	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction	Completed	SW3510C	09/04/20 10:00	JL	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 09/04/20 19:56, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	Not detected	5		ug/L	2	83-32-9	
Acenaphthylene	Not detected	5		ug/L	2	208-96-8	
Anthracene	Not detected	5		ug/L	2	120-12-7	
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3	
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2	
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9	
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2	
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1	
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1	
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7	
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3	
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7	
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8	
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7	
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7	
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3	
Chrysene	Not detected	1		ug/L	2	218-01-9	
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL	
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7	
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3	
Dibenzofuran	Not detected	4		ug/L	2	132-64-9	
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2	
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1	
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7	
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1	
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2	
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2	
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9	
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1	
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5	
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2	
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2	



Analytical Laboratory Report

Lab Sample ID: S17055.01 (continued)

Sample Tag: MW-13-36R_083120

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 09/04/20 19:56, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7	
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0	
Fluoranthene	Not detected	1		ug/L	2	206-44-0	
Fluorene	Not detected	5		ug/L	2	86-73-7	
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1	
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3	
Hexachlorocyclopentadiene	Not detected	5		ug/L	2	77-47-4	
Hexachloroethane	Not detected	5		ug/L	2	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5	
Isophorone	Not detected	5		ug/L	2	78-59-1	
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6	
Naphthalene	Not detected	5		ug/L	2	91-20-3	
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4	
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2	
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6	
Nitrobenzene	Not detected	5		ug/L	2	98-95-3	
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5	
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7	
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6	
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7	
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5	
Phenanthrene	Not detected	2		ug/L	2	85-01-8	
Phenol	Not detected	5		ug/L	2	108-95-2	
Pyrene	Not detected	5		ug/L	2	129-00-0	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1	
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4	
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2	



Analytical Laboratory Report

Lab Sample ID: S17055.02

Sample Tag: Dup-02_083120

Collected Date/Time: 08/31/2020 00:01

Matrix: Groundwater

COC Reference: 127303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Amber	None	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction	Completed	SW3510C	09/04/20 10:00	JL	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 09/04/20 20:27, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	Not detected	5		ug/L	2	83-32-9	
Acenaphthylene	Not detected	5		ug/L	2	208-96-8	
Anthracene	Not detected	5		ug/L	2	120-12-7	
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3	
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2	
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9	
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2	
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1	
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1	
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7	
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3	
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7	
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8	
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7	
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7	
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3	
Chrysene	Not detected	1		ug/L	2	218-01-9	
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL	
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7	
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3	
Dibenzofuran	Not detected	4		ug/L	2	132-64-9	
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2	
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1	
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7	
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1	
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2	
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2	
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9	
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1	
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5	
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2	
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2	



Analytical Laboratory Report

Lab Sample ID: S17055.02 (continued)

Sample Tag: Dup-02_083120

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 09/04/20 20:27, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7	
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0	
Fluoranthene	Not detected	1		ug/L	2	206-44-0	
Fluorene	Not detected	5		ug/L	2	86-73-7	
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1	
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3	
Hexachlorocyclopentadiene	Not detected	5		ug/L	2	77-47-4	
Hexachloroethane	Not detected	5		ug/L	2	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5	
Isophorone	Not detected	5		ug/L	2	78-59-1	
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6	
Naphthalene	Not detected	5		ug/L	2	91-20-3	
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4	
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2	
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6	
Nitrobenzene	Not detected	5		ug/L	2	98-95-3	
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5	
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7	
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6	
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7	
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5	
Phenanthrene	Not detected	2		ug/L	2	85-01-8	
Phenol	Not detected	5		ug/L	2	108-95-2	
Pyrene	Not detected	5		ug/L	2	129-00-0	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1	
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4	
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2	



Analytical Laboratory Report

Lab Sample ID: S17055.03

Sample Tag: MW-13-35_083120

Collected Date/Time: 08/31/2020 16:50

Matrix: Groundwater

COC Reference: 127303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	1L Amber	None	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction	Completed	SW3510C	09/04/20 10:00	JL	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 09/04/20 20:57, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	Not detected	5		ug/L	2	83-32-9	
Acenaphthylene	Not detected	5		ug/L	2	208-96-8	
Anthracene	Not detected	5		ug/L	2	120-12-7	
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3	
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2	
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9	
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2	
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1	
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1	
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7	
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3	
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7	
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8	
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7	
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7	
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3	
Chrysene	Not detected	1		ug/L	2	218-01-9	
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL	
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7	
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3	
Dibenzofuran	Not detected	4		ug/L	2	132-64-9	
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2	
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1	
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7	
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1	
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2	
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2	
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9	
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1	
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5	
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2	
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2	



Analytical Laboratory Report

Lab Sample ID: S17055.03 (continued)

Sample Tag: MW-13-35_083120

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 09/04/20 20:57, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7	
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0	
Fluoranthene	Not detected	1		ug/L	2	206-44-0	
Fluorene	Not detected	5		ug/L	2	86-73-7	
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1	
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3	
Hexachlorocyclopentadiene	Not detected	5		ug/L	2	77-47-4	
Hexachloroethane	Not detected	5		ug/L	2	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5	
Isophorone	Not detected	5		ug/L	2	78-59-1	
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6	
Naphthalene	Not detected	5		ug/L	2	91-20-3	
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4	
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2	
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6	
Nitrobenzene	Not detected	5		ug/L	2	98-95-3	
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5	
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7	
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6	
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7	
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5	
Phenanthrene	Not detected	2		ug/L	2	85-01-8	
Phenol	Not detected	5		ug/L	2	108-95-2	
Pyrene	Not detected	5		ug/L	2	129-00-0	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1	
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4	
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2	



Analytical Laboratory Report

Lab Sample ID: S17055.04

Sample Tag: Trip Blank

Collected Date/Time: 08/31/2020 00:01

Matrix: Groundwater

COC Reference: 127303

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	4.1	IR

Other / Misc.

Method: , Run Date: 09/02/20 15:40, Analyst: MMC

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

Merit Laboratories Login Checklist

Lab Set ID:S17055

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30042872 / RACER Lansing Plant 6

Submitted:08/31/2020 18:45 Login User: REJ

Attention: Tiffany Linder

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.1
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used HCl VOA provided for Trip Blank but SVOC requested
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Do water VOC or TOX bottles contain headspace

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

Client Review By: _____ Date: _____



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

C.O.C. PAGE # 1 OF 1

127303

REPORT TO

CHAIN OF CUSTODY RECORD

Plant 6

INVOICE TO

CONTACT NAME: *Tiffany Linder*
 COMPANY: *Arcadis*
 ADDRESS: *28550 Cabot Drive, Suite 500*
 CITY: *Novi* STATE: *MI* ZIP CODE: *48377*
 PHONE NO: *810-225-1928* FAX NO: *248-994-2241* P.O. NO: *30642872*
 E-MAIL ADDRESS: *Tiffany.Linder@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: *36042872/RACER Lansing Plant 6* SAMPLER(S) - PLEASE PRINT/SIGN NAME: *Austin Westhuis*
 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=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	SVOCs
	DATE	TIME											
<i>17055.01</i>	<i>8/31/20</i>	<i>1420</i>	<i>MW-13-36R_083120</i>	<i>GW</i>	<i>2</i>	<i>2</i>							<i>X</i>
<i>.02</i>	<i>8/31/20</i>	<i>---</i>	<i>Dup-02_083120</i>	<i>GW</i>	<i>2</i>	<i>2</i>							<i>X</i>
<i>.03</i>	<i>8/31/20</i>	<i>1650</i>	<i>MW-13-35_083120</i>	<i>GW</i>	<i>2</i>	<i>2</i>							<i>X</i>
<i>.04</i>	<i>8/31/20</i>	<i>---</i>	<i>Trip Blank</i>	<i>GW</i>	<i>1</i>	<i>1</i>							<i>X</i>

RELINQUISHED BY: *Austin Westhuis / Arcadis* *IS* Sampler DATE: *8/31/20* TIME: *1815*
 RECEIVED BY: *Merit Sample Drop Box* DATE: *8/31/20* TIME: *1815*
 RELINQUISHED BY: *Merit Drop Box* DATE: *8/31/20* TIME: *1845*
 RECEIVED BY: *Wiley Jr* DATE: *8/31/20* TIME: *1845*

RELINQUISHED BY: SIGNATURE/ORGANIZATION DATE TIME
 RECEIVED BY: SIGNATURE/ORGANIZATION DATE TIME
 SEAL NO. SEAL INTACT YES NO INITIALS
 SEAL NO. SEAL INTACT YES NO INITIALS
 NOTES: *4.1* TEMP. ON ARRIVAL _____

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



Quality Control Report

Report ID: QC-S17055-01
Generated on 09/09/2020

Report to
Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: 248-994-2272 FAX:

Report Summary

Lab Sample ID(s): S17055.01-S17055.03
Project: 30042872 / RACER Lansing Plant 6
Submitted Date/Time: 08/31/2020 18:45
Sampled by: Austin Westhuis
P.O. #: 30042872

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-4)
Prep Batch Summary (Page 5)
Surrogates per Lab Sample (Pages 6-8)
Surrogates per QC Sample (Page 9)
Batch QC Results (Pages 10-14)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S17055.01

Sample Tag: MW-13-36R_083120

Collected Date/Time: 08/31/2020 14:20

Matrix: Groundwater

COC Reference: 127303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	09/04/20 19:56	P200904	SF200904W01	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S17055.02

Sample Tag: Dup-02_083120

Collected Date/Time: 08/31/2020 00:01

Matrix: Groundwater

COC Reference: 127303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	09/04/20 20:27	P200904	SF200904W01	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S17055.03

Sample Tag: MW-13-35_083120

Collected Date/Time: 08/31/2020 16:50

Matrix: Groundwater

COC Reference: 127303

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	09/04/20 20:57	P200904	SF200904W01	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Semi-Volatiles, Prep Batch ID: SF200904W01

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17055.01	Semi-Volatile Organics - MDEQ	SW8270D	09/04/20 19:56	P200904
S17055.02	Semi-Volatile Organics - MDEQ	SW8270D	09/04/20 20:27	P200904
S17055.03	Semi-Volatile Organics - MDEQ	SW8270D	09/04/20 20:57	P200904

QC Report - Surrogates per Lab Sample

Lab Sample ID: S17055.01

Sample Tag: MW-13-36R_083120

Collected Date/Time: 08/31/2020 14:20

Matrix: Groundwater

COC Reference: 127303

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P200904, Run Date: 09/04/2020 19:56, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		36.70	10.0	110.0
2-Fluorobiphenyl		77.90	10.0	116.0
Nitrobenzene-D5		69.00	10.0	114.0
Phenol-D5		24.90	10.0	110.0
2,4,6-Tribromophenol		92.40	10.0	123.0
Terphenyl-D14		95.60	10.0	141.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S17055.02

Sample Tag: Dup-02_083120

Collected Date/Time: 08/31/2020 00:01

Matrix: Groundwater

COC Reference: 127303

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P200904, Run Date: 09/04/2020 20:27, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		28.00	10.0	110.0
2-Fluorobiphenyl		67.60	10.0	116.0
Nitrobenzene-D5		59.60	10.0	114.0
Phenol-D5		19.40	10.0	110.0
2,4,6-Tribromophenol		78.00	10.0	123.0
Terphenyl-D14		73.00	10.0	141.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S17055.03

Sample Tag: MW-13-35_083120

Collected Date/Time: 08/31/2020 16:50

Matrix: Groundwater

COC Reference: 127303

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P200904, Run Date: 09/04/2020 20:57, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		29.00	10.0	110.0
2-Fluorobiphenyl		46.80	10.0	116.0
Nitrobenzene-D5		44.10	10.0	114.0
Phenol-D5		20.00	10.0	110.0
2,4,6-Tribromophenol		51.90	10.0	123.0
Terphenyl-D14		64.60	10.0	141.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SF200904W01

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: p200904.blkw04a

Run in Batch: P200904, Run Date: 09/04/2020 17:22, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		29.60	10.0	110.0
2-Fluorobiphenyl		63.00	10.0	116.0
Nitrobenzene-D5		63.00	10.0	114.0
Phenol-D5		19.60	10.0	110.0
2,4,6-Tribromophenol		77.60	10.0	123.0
Terphenyl-D14		72.20	10.0	141.0

Blank (BLK)

Lab Sample ID: p200908.blkw04a

Run in Batch: P200908, Run Date: 09/08/2020 18:05, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: p200904.lcsw04a

Run in Batch: P200904, Run Date: 09/04/2020 17:53, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		34.60	10.0	110.0
2-Fluorobiphenyl		76.60	10.0	116.0
Nitrobenzene-D5		75.20	10.0	114.0
Phenol-D5		23.40	10.0	110.0
2,4,6-Tribromophenol		94.60	10.0	123.0
Terphenyl-D14		85.40	10.0	141.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: p200904.lcsdw04a, Parent Sample ID: p200904.lcsw04a

Run in Batch: P200904, Run Date: 09/04/2020 18:23, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		35.30	10.0	110.0
2-Fluorobiphenyl		79.20	10.0	116.0
Nitrobenzene-D5		76.10	10.0	114.0
Phenol-D5		23.90	10.0	110.0
2,4,6-Tribromophenol		103.20	10.0	123.0
Terphenyl-D14		85.80	10.0	141.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF200904W01

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: p200904.blkw04a

Run in Batch: P200904, Run Date: 09/04/2020 17:22, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Acenaphthylene		ND	0.5	ug/l
Anthracene		ND	0.5	ug/l
Benzo(a)anthracene		ND	0.5	ug/l
Benzo(b)fluoranthene		ND	0.5	ug/l
Benzo(k)fluoranthene		ND	0.5	ug/l
Benzo(ghi)perylene		ND	0.5	ug/l
Benzo(a)pyrene		ND	0.5	ug/l
bis(2-Chloroethoxy)methane		ND	0.5	ug/l
bis(2-Chloroethyl)ether		ND	0.5	ug/l
bis(2-Chloroisopropyl)ether		ND	0.5	ug/l
bis(2-Ethylhexyl)phthalate		ND	0.5	ug/l
4-Bromophenyl phenyl ether		ND	0.5	ug/l
Butyl benzyl phthalate		ND	0.5	ug/l
4-Chloroaniline		ND	0.5	ug/l
2-Chloronaphthalene		ND	0.5	ug/l
4-Chlorophenyl phenyl ether		ND	0.5	ug/l
Chrysene		ND	0.5	ug/l
3-, 4-Methylphenol (p,m-Cresol)		ND	1	ug/l
Dibenzo(ah)anthracene		ND	0.5	ug/l
Dibenzofuran		ND	0.5	ug/l
di-n-Butyl phthalate		ND	0.5	ug/l
1,2-Dichlorobenzene		ND	0.5	ug/l
1,3-Dichlorobenzene		ND	0.5	ug/l
3,3'-Dichlorobenzidine		ND	0.5	ug/l
2,4-Dichlorophenol		ND	0.5	ug/l
Diethyl phthalate		ND	0.5	ug/l
2,4-Dimethylphenol		ND	0.5	ug/l
Dimethyl phthalate		ND	0.5	ug/l
4,6-Dinitro-2-methylphenol		ND	0.5	ug/l
2,4-Dinitrophenol		ND	0.5	ug/l
2,6-Dinitrotoluene		ND	0.5	ug/l
1,2-Diphenylhydrazine		ND	0.5	ug/l
di-n-Octyl phthalate		ND	0.5	ug/l
Fluoranthene		ND	0.5	ug/l
Fluorene		ND	0.5	ug/l
Hexachlorobenzene		ND	0.5	ug/l
Hexachlorobutadiene		ND	0.5	ug/l
Hexachlorocyclopentadiene		ND	0.5	ug/l
Hexachloroethane		ND	0.5	ug/l
Indeno(1,2,3-cd)pyrene		ND	0.5	ug/l
Isophorone		ND	0.5	ug/l
2-Methylnaphthalene		ND	0.5	ug/l
Naphthalene		ND	0.5	ug/l
2-Nitroaniline		ND	0.5	ug/l
3-Nitroaniline		ND	0.5	ug/l
4-Nitroaniline		ND	0.5	ug/l

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF200904W01 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: p200904.blkw04a

Run in Batch: P200904, Run Date: 09/04/2020 17:22, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Nitrobenzene		ND	0.5	ug/l
2-Nitrophenol		ND	0.5	ug/l
N-Nitrosodiphenylamine		ND	0.5	ug/l
N-Nitrosodi-n-propylamine		ND	0.5	ug/l
Phenanthrene		ND	0.5	ug/l
2,4,5-Trichlorophenol		ND	0.5	ug/l
2,4,6-Trichlorophenol		ND	0.5	ug/l

Blank (BLK)

Lab Sample ID: p200908.blkw04a

Run in Batch: P200908, Run Date: 09/08/2020 18:05, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.01	ug/l
Hexachlorobenzene		ND	0.01	ug/l
Hexachlorobutadiene		ND	0.01	ug/l
Hexachlorocyclopentadiene		ND	0.01	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: p200904.lcsw04a

Run in Batch: P200904, Run Date: 09/04/2020 17:53, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Acenaphthene		102.86	34.8	124.7
Acenaphthylene		109.48	16.9	140.7
Anthracene		109.86	38.1	115.5
Benzo(a)anthracene		111.14	40.7	115.5
Benzo(b)fluoranthene		107.72	43.3	119.4
Benzo(k)fluoranthene		100.04	41.2	116.9
Benzo(ghi)perylene		105.96	36.7	122.1
Benzo(a)pyrene		105.72	51.2	133.4
bis(2-Chloroethoxy)methane		101.34	48.3	105.4
bis(2-Chloroethyl)ether		86.54	43.4	101.8
bis(2-Chloroisopropyl)ether		65.84	33.2	105.8
bis(2-Ethylhexyl)phthalate		105.02	45.2	126.2
4-Bromophenyl phenyl ether	*	117.42	44.5	116.9
Butyl benzyl phthalate		103.80	47.4	121.6
4-Chloroaniline		88.64	33.4	89.4
2-Chloronaphthalene		100.14	50.3	108.3
4-Chloro-3-methylphenol		100.98	39.0	123.2
2-Chlorophenol		87.78	35.5	114.1
4-Chlorophenyl phenyl ether		106.52	52.2	116.5
Chrysene		114.54	28.9	136.7
3-, 4-Methylphenol (p,m-Cresol)		61.36	36.4	115.4
Dibenzo(ah)anthracene		101.42	33.8	132.4
Dibenzofuran		110.06	52.1	111.9
di-n-Butyl phthalate		115.68	48.1	121.8
1,2-Dichlorobenzene		77.64	9.6	166.2

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF200904W01 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: p200904.lcsw04a

Run in Batch: P200904, Run Date: 09/04/2020 17:53, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,3-Dichlorobenzene		73.42	36.8	105.8
1,4-Dichlorobenzene		73.92	20.7	137.7
3,3'-Dichlorobenzidine	*	105.44	26.1	103.7
2,4-Dichlorophenol		102.36	57.7	115.6
Diethyl phthalate		112.48	48.1	118.0
2,4-Dimethylphenol		102.62	43.4	114.9
Dimethyl phthalate		113.20	49.3	118.4
4,6-Dinitro-2-methylphenol		97.72	18.7	149.0
2,4-Dinitrophenol		31.04	10.0	171.2
2,4-Dinitrotoluene		111.82	35.8	126.7
2,6-Dinitrotoluene		112.90	48.0	119.1
1,2-Diphenylhydrazine		109.78	40.2	136.4
di-n-Octyl phthalate		102.56	45.7	123.1
Fluoranthene		117.78	43.0	127.9
Fluorene		108.78	37.1	110.3
Hexachlorobenzene	*	121.68	45.2	118.5
Hexachlorobutadiene		84.34	30.2	119.4
Hexachlorocyclopentadiene		61.42	10.0	271.8
Hexachloroethane		67.56	23.8	138.1
Indeno(1,2,3-cd)pyrene		107.32	41.5	116.9
Isophorone		98.66	44.9	107.5
2-Methylnaphthalene		96.62	25.5	165.5
Naphthalene		91.06	32.9	135.8
2-Nitroaniline		107.18	53.4	119.9
3-Nitroaniline		93.50	42.1	109.0
4-Nitroaniline		94.80	45.8	119.7
Nitrobenzene		92.76	41.7	110.1
2-Nitrophenol		100.72	54.4	109.5
4-Nitrophenol		49.70	15.4	122.0
N-Nitrosodiphenylamine	*	115.04	10.0	104.2
N-Nitrosodi-n-propylamine		93.92	35.8	109.3
Pentachlorophenol		101.76	10.3	139.1
Phenanthrene		105.96	31.8	123.3
Phenol		32.50	10.0	130.4
Pyrene		109.14	37.8	131.4
1,2,4-Trichlorobenzene		89.66	32.2	118.4
2,4,5-Trichlorophenol		113.44	48.9	118.8
2,4,6-Trichlorophenol		108.38	47.8	117.4

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: p200904.lcsw04a, Parent Sample ID: p200904.lcsw04a

Run in Batch: P200904, Run Date: 09/04/2020 18:23, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Acenaphthene		106.44	34.8	124.7	3.4	30.0
Acenaphthylene		109.88	16.9	140.7	0.4	30.0
Anthracene		111.02	38.1	115.5	1.1	30.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF200904W01 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: p200904.lcsdw04a, Parent Sample ID: p200904.lcsw04a

Run in Batch: P200904, Run Date: 09/04/2020 18:23, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)anthracene		111.54	40.7	115.5	0.4	30.0
Benzo(b)fluoranthene		108.24	43.3	119.4	0.5	30.0
Benzo(k)fluoranthene		103.68	41.2	116.9	3.6	30.0
Benzo(ghi)perylene		107.20	36.7	122.1	1.2	30.0
Benzo(a)pyrene		105.00	51.2	133.4	0.7	30.0
bis(2-Chloroethoxy)methane		103.04	48.3	105.4	1.7	30.0
bis(2-Chloroethyl)ether		88.36	43.4	101.8	2.1	30.0
bis(2-Chloroisopropyl)ether		66.62	33.2	105.8	1.2	30.0
bis(2-Ethylhexyl)phthalate		105.22	45.2	126.2	0.2	30.0
4-Bromophenyl phenyl ether		116.72	44.5	116.9	0.6	30.0
Butyl benzyl phthalate		105.58	47.4	121.6	1.7	30.0
4-Chloroaniline		88.42	33.4	89.4	0.2	30.0
2-Chloronaphthalene		105.42	50.3	108.3	5.1	30.0
4-Chloro-3-methylphenol		105.40	39.0	123.2	4.3	30.0
2-Chlorophenol		88.78	35.5	114.1	1.1	30.0
4-Chlorophenyl phenyl ether		110.88	52.2	116.5	4.0	30.0
Chrysene		110.96	28.9	136.7	3.2	30.0
3-, 4-Methylphenol (p,m-Cresol)		62.59	36.4	115.4	2.0	30.0
Dibenzo(ah)anthracene		99.56	33.8	132.4	1.9	30.0
Dibenzofuran		111.28	52.1	111.9	1.1	30.0
di-n-Butyl phthalate		118.46	48.1	121.8	2.4	30.0
1,2-Dichlorobenzene		78.88	9.6	166.2	1.6	30.0
1,3-Dichlorobenzene		73.80	36.8	105.8	0.5	30.0
1,4-Dichlorobenzene		74.22	20.7	137.7	0.4	30.0
3,3'-Dichlorobenzidine		102.08	26.1	103.7	3.2	30.0
2,4-Dichlorophenol		106.54	57.7	115.6	4.0	30.0
Diethyl phthalate		114.30	48.1	118.0	1.6	30.0
2,4-Dimethylphenol		104.12	43.4	114.9	1.5	30.0
Dimethyl phthalate		115.34	49.3	118.4	1.9	30.0
4,6-Dinitro-2-methylphenol		100.78	18.7	149.0	3.1	30.0
2,4-Dinitrophenol		32.96	10.0	171.2	6.0	30.0
2,4-Dinitrotoluene		116.14	35.8	126.7	3.8	30.0
2,6-Dinitrotoluene		114.58	48.0	119.1	1.5	30.0
1,2-Diphenylhydrazine		108.06	40.2	136.4	1.6	30.0
di-n-Octyl phthalate		103.96	45.7	123.1	1.4	30.0
Fluoranthene		119.26	43.0	127.9	1.2	30.0
Fluorene		108.72	37.1	110.3	0.1	30.0
Hexachlorobenzene	*	131.52	45.2	118.5	7.8	30.0
Hexachlorobutadiene		87.96	30.2	119.4	4.2	30.0
Hexachlorocyclopentadiene		61.12	10.0	271.8	0.5	30.0
Hexachloroethane		68.48	23.8	138.1	1.4	30.0
Indeno(1,2,3-cd)pyrene		108.70	41.5	116.9	1.3	30.0
Isophorone		101.26	44.9	107.5	2.6	30.0
2-Methylnaphthalene		97.00	25.5	165.5	0.4	30.0
Naphthalene		92.54	32.9	135.8	1.6	30.0
2-Nitroaniline		107.78	53.4	119.9	0.6	30.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF200904W01 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: p200904.lcsdw04a, Parent Sample ID: p200904.lcsw04a

Run in Batch: P200904, Run Date: 09/04/2020 18:23, Prep Date: 09/04/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
3-Nitroaniline		96.54	42.1	109.0	3.2	30.0
4-Nitroaniline		96.48	45.8	119.7	1.8	30.0
Nitrobenzene		94.60	41.7	110.1	2.0	30.0
2-Nitrophenol		103.98	54.4	109.5	3.2	30.0
4-Nitrophenol		50.48	15.4	122.0	1.6	30.0
N-Nitrosodiphenylamine	*	116.34	10.0	104.2	1.1	30.0
N-Nitrosodi-n-propylamine		95.68	35.8	109.3	1.9	30.0
Pentachlorophenol		102.72	10.3	139.1	0.9	30.0
Phenanthrene		107.64	31.8	123.3	1.6	30.0
Phenol		32.22	10.0	130.4	0.9	30.0
Pyrene		107.86	37.8	131.4	1.2	30.0
1,2,4-Trichlorobenzene		91.52	32.2	118.4	2.1	30.0
2,4,5-Trichlorophenol	*	119.76	48.9	118.8	5.4	30.0
2,4,6-Trichlorophenol		113.70	47.8	117.4	4.8	30.0



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C.O.C. PAGE # 1 OF 1

127303

REPORT TO

CHAIN OF CUSTODY RECORD

Plant 6

INVOICE TO

CONTACT NAME: *Tiffany Linder*
 COMPANY: *Arcadis*
 ADDRESS: *28550 Cabot Drive, Suite 500*
 CITY: *Novi* STATE: *MI* ZIP CODE: *48377*
 PHONE NO.: *810-225-1928* FAX NO.: *248-994-2241* P.O. NO.: *30642872*
 E-MAIL ADDRESS: *Tiffany.Linder@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: *36042872/RACER Lansing Plant 6* SAMPLER(S) - PLEASE PRINT/SIGN NAME: *Austin Westhuis*
 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=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	SVOCs
	DATE	TIME											
<i>17055.01</i>	<i>8/31/20</i>	<i>1420</i>	<i>MW-13-36R_083120</i>	<i>GW</i>	<i>2</i>	<i>2</i>							<i>X</i>
<i>.02</i>	<i>8/31/20</i>	<i>---</i>	<i>Dup-02_083120</i>	<i>GW</i>	<i>2</i>	<i>2</i>							<i>X</i>
<i>.03</i>	<i>8/31/20</i>	<i>1650</i>	<i>MW-13-35_083120</i>	<i>GW</i>	<i>2</i>	<i>2</i>							<i>X</i>
<i>.04</i>	<i>8/31/20</i>	<i>---</i>	<i>Trip Blank</i>	<i>GW</i>	<i>1</i>	<i>1</i>							<i>X</i>

RELINQUISHED BY: *Austin Westhuis / Arcadis* Sampler DATE: *8/31/20* TIME: *1815*
 RECEIVED BY: *Merit Sample Drop Box* DATE: *8/31/20* TIME: *1815*
 RELINQUISHED BY: *Merit Drop Box* DATE: *8/31/20* TIME: *1845*
 RECEIVED BY: *Wiley Jr* DATE: *8/31/20* TIME: *1845*

RELINQUISHED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
 RECEIVED BY: SIGNATURE/ORGANIZATION: DATE: TIME:
 SEAL NO. SEAL INTACT YES NO INITIALS: NOTES: TEMP. ON ARRIVAL: *4.1*
 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: S19673.01(01)+QC01
Generated on 12/11/2020

Report to

Attention: Tiffany Linder
Arcadis
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Novi, MI 48377

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Additional Contacts: Alex Villhauer, Marina Samp, Kaitlyn Voet

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

Report Summary

Lab Sample ID(s): S19673.01-S19673.03
Project: 30042872.04700 / Racer Lansing
Collected Date(s): 12/03/2020
Submitted Date/Time: 12/03/2020 16:20
Sampled by: Austin Westhuis
P.O. #: 30042872.04700

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

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

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

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

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

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

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

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

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S19673.01	MW-20-131_120220	Groundwater	12/03/20 10:05
S19673.02	MW-20-132_120220	Groundwater	12/03/20 10:50
S19673.03	Trip Blank_120220	Water	12/03/20 00:01



Analytical Laboratory Report

Lab Sample ID: S19673.01

Sample Tag: MW-20-131_120220

Collected Date/Time: 12/03/2020 10:05

Matrix: Groundwater

COC Reference: 132266

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/20 11:15	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/10/20 20:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	3	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	3	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S19673.01 (continued)

Sample Tag: MW-20-131_120220

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/10/20 20:18, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S19673.02

Sample Tag: MW-20-132_120220

Collected Date/Time: 12/03/2020 10:50

Matrix: Groundwater

COC Reference: 132266

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/20 11:15	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/10/20 20:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	1	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	9	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S19673.02 (continued)

Sample Tag: MW-20-132_120220

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/10/20 20:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S19673.03

Sample Tag: Trip Blank_120220

Collected Date/Time: 12/03/2020 00:01

Matrix: Water

COC Reference: 132266

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/11/20 11:15	BML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/10/20 15:41, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S19673.03 (continued)

Sample Tag: Trip Blank_120220

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/10/20 15:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Quality Control Report

Report ID: S19673.01(01)+QC01
Generated on 12/11/2020

Report to
Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: 248-994-2272 FAX:

Report Summary

Lab Sample ID(s): S19673.01-S19673.03
Project: 30042872.04700 / Racer Lansing
Submitted Date/Time: 12/03/2020 16:20
Sampled by: Austin Westhuis
P.O. #: 30042872.04700

QC Report Sections

- Cover Page (Page 12)
- Analysis Summary (Pages 13-15)
- Prep Batch Summary (Page 16)
- Surrogates per Lab Sample (Pages 17-19)
- Surrogates per QC Sample (Page 20)
- Internal Standards per Lab Sample (Pages 21-23)
- Internal Standards per QC Sample (Page 24)
- Batch QC Results (Pages 25-29)

Report Flag Descriptions

- *: QC result is outside of indicated control limits
- W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S19673.01

Sample Tag: MW-20-131_120220

Collected Date/Time: 12/03/2020 10:05

Matrix: Groundwater

COC Reference: 132266

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	12/10/20 20:18	201210A7	VF201210W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S19673.02

Sample Tag: MW-20-132_120220

Collected Date/Time: 12/03/2020 10:50

Matrix: Groundwater

COC Reference: 132266

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	12/10/20 20:41	201210A7	VF201210W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S19673.03

Sample Tag: Trip Blank_120220

Collected Date/Time: 12/03/2020 00:01

Matrix: Water

COC Reference: 132266

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	12/10/20 15:41	201210A7	VF201210W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF201210W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S19673.01	Volatile Organics - DEQ List	SW5030C/8260C	12/10/20 20:18	201210A7
S19673.02	Volatile Organics - DEQ List	SW5030C/8260C	12/10/20 20:41	201210A7
S19673.03	Volatile Organics - DEQ List	SW5030C/8260C	12/10/20 15:41	201210A7

QC Report - Surrogates per Lab Sample

Lab Sample ID: S19673.01

Sample Tag: MW-20-131_120220

Collected Date/Time: 12/03/2020 10:05

Matrix: Groundwater

COC Reference: 132266

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 201210A7, Run Date: 12/10/2020 20:18, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		95.3	80.0	124.0
1,2-Dichloroethane-D4		97.0	72.0	125.0
Toluene-D8		92.0	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S19673.02

Sample Tag: MW-20-132_120220

Collected Date/Time: 12/03/2020 10:50

Matrix: Groundwater

COC Reference: 132266

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 201210A7, Run Date: 12/10/2020 20:41, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		94.8	80.0	124.0
1,2-Dichloroethane-D4		92.7	72.0	125.0
Toluene-D8		92.1	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S19673.03

Sample Tag: Trip Blank_120220

Collected Date/Time: 12/03/2020 00:01

Matrix: Water

COC Reference: 132266

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 201210A7, Run Date: 12/10/2020 15:41, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		96.1	80.0	124.0
1,2-Dichloroethane-D4		91.5	72.0	125.0
Toluene-D8		91.1	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF201210W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 201210A7.BLKW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 14:07, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		94.2	80.0	124.0
1,2-Dichloroethane-D4		87.4	72.0	125.0
Toluene-D8		91.4	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 12:32, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		94.3	80.0	124.0
1,2-Dichloroethane-D4		87.9	72.0	125.0
Toluene-D8		92.2	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 201210A7.LCSDW10B, Parent Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 13:21, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		93.8	80.0	124.0
1,2-Dichloroethane-D4		85.3	72.0	125.0
Toluene-D8		92.5	89.0	112.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S19673.01

Sample Tag: MW-20-131_120220

Collected Date/Time: 12/03/2020 10:05

Matrix: Groundwater

COC Reference: 132266

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 201210A7, Run Date: 12/10/2020 20:18, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		88.1	50.0	200.0
1,4-Difluorobenzene		89.7	50.0	200.0
Chlorobenzene-D5		92.3	50.0	200.0
1,4-Dichlorobenzene-D4		96.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S19673.02

Sample Tag: MW-20-132_120220

Collected Date/Time: 12/03/2020 10:50

Matrix: Groundwater

COC Reference: 132266

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 201210A7, Run Date: 12/10/2020 20:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		89.6	50.0	200.0
1,4-Difluorobenzene		90.8	50.0	200.0
Chlorobenzene-D5		92.5	50.0	200.0
1,4-Dichlorobenzene-D4		95.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S19673.03

Sample Tag: Trip Blank_120220

Collected Date/Time: 12/03/2020 00:01

Matrix: Water

COC Reference: 132266

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 201210A7, Run Date: 12/10/2020 15:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		93.9	50.0	200.0
1,4-Difluorobenzene		94.2	50.0	200.0
Chlorobenzene-D5		94.1	50.0	200.0
1,4-Dichlorobenzene-D4		98.1	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF201210W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 201210A7.BLKW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 14:07, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		94.0	50.0	200.0
1,4-Difluorobenzene		94.4	50.0	200.0
Chlorobenzene-D5		94.3	50.0	200.0
1,4-Dichlorobenzene-D4		95.7	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 12:32, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		100.4	50.0	200.0
1,4-Difluorobenzene		100.5	50.0	200.0
Chlorobenzene-D5		101.1	50.0	200.0
1,4-Dichlorobenzene-D4		100.5	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 201210A7.LCSDW10B, Parent Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 13:21, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		95.5	50.0	200.0
1,4-Difluorobenzene		95.6	50.0	200.0
Chlorobenzene-D5		95.6	50.0	200.0
1,4-Dichlorobenzene-D4		94.3	50.0	200.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201210W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 201210A7.BLKW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 14:07, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201210W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 201210A7.BLKW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 14:07, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 12:32, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		98.9	67.4	121.2
Acetone		116.8	29.9	161.5
Methyl iodide		94.3	68.8	116.4
Carbon disulfide		92.8	63.8	137.4
tert-Methyl butyl ether (MTBE)		96.5	73.2	122.4
Acrylonitrile		108.8	69.9	128.9
2-Butanone (MEK)		106.8	44.0	134.4
Dichlorodifluoromethane		92.7	10.0	222.8
Chloromethane		88.5	23.8	166.5
Vinyl chloride		88.4	43.5	149.1
Bromomethane		88.1	56.8	151.3
Chloroethane		87.1	53.4	149.4
Trichlorofluoromethane		89.8	59.7	151.8
1,1-Dichloroethene		94.1	69.6	139.4
Methylene chloride		92.5	73.3	121.1
trans-1,2-Dichloroethene		91.2	73.6	129.3
1,1-Dichloroethane		90.9	71.5	126.2
cis-1,2-Dichloroethene		87.7	76.6	122.1
Tetrahydrofuran		104.5	59.0	117.9
Chloroform		90.7	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201210W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 12:32, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		90.6	78.2	120.8
1,1,1-Trichloroethane		90.5	79.4	130.9
4-Methyl-2-pentanone (MIBK)		103.1	71.6	125.2
2-Hexanone		103.4	55.4	136.9
Carbon tetrachloride		88.7	72.6	133.0
Benzene		88.6	79.9	124.9
1,2-Dichloroethane		88.7	76.0	126.3
Trichloroethene		88.6	79.7	124.2
1,2-Dichloropropane		94.2	78.6	126.4
Bromodichloromethane		92.8	80.4	128.2
Dibromomethane		91.7	76.9	122.1
cis-1,3-Dichloropropene		93.9	79.8	129.9
Toluene		89.4	79.8	124.5
trans-1,3-Dichloropropene		95.0	74.0	131.3
1,1,2-Trichloroethane		92.1	78.7	123.1
Tetrachloroethene		87.0	74.5	124.5
trans-1,4-Dichloro-2-butene		108.3	68.6	135.4
Dibromochloromethane		94.4	74.6	127.2
1,2-Dibromoethane		90.2	70.3	133.7
Chlorobenzene		88.5	79.2	122.7
1,1,1,2-Tetrachloroethane		92.7	80.3	128.2
Ethylbenzene		88.1	79.5	129.1
p,m-Xylene		89.1	79.4	132.2
o-Xylene		90.3	80.2	131.0
Styrene		89.1	69.5	126.7
Isopropylbenzene		89.6	74.4	121.5
Bromoform		96.4	69.4	128.0
1,1,2,2-Tetrachloroethane		94.4	79.8	126.3
1,2,3-Trichloropropane		95.3	78.3	138.8
n-Propylbenzene		89.0	82.0	130.7
Bromobenzene		89.2	78.7	124.6
1,3,5-Trimethylbenzene		91.0	81.3	128.9
tert-Butylbenzene		90.0	80.7	128.9
1,2,4-Trimethylbenzene		90.7	81.4	130.8
sec-Butylbenzene		90.6	77.4	129.8
p-Isopropyltoluene		92.5	79.8	137.5
1,3-Dichlorobenzene		89.7	77.0	131.3
1,4-Dichlorobenzene		87.5	20.7	137.7
1,2-Dichlorobenzene		90.8	10.0	166.2
1,2,3-Trimethylbenzene		94.2	76.3	124.2
n-Butylbenzene		90.5	80.0	133.3
Hexachloroethane		96.4	23.8	138.1
1,2-Dibromo-3-chloropropane		104.5	21.2	189.4
1,2,4-Trichlorobenzene		97.6	27.4	143.4
1,2,3-Trichlorobenzene		98.5	75.4	131.4
Naphthalene		98.2	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201210W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 12:32, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		105.0	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 201210A7.LCSDW10B, Parent Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 13:21, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		98.7	67.4	121.2	0.2	30.0
Acetone		123.0	29.9	161.5	5.2	30.0
Methyl iodide		98.0	68.8	116.4	3.8	30.0
Carbon disulfide		100.2	63.8	137.4	7.6	30.0
tert-Methyl butyl ether (MTBE)		93.5	73.2	122.4	3.1	30.0
Acrylonitrile		109.6	69.9	128.9	0.7	30.0
2-Butanone (MEK)		108.0	44.0	134.4	1.1	30.0
Dichlorodifluoromethane		81.0	10.0	222.8	13.4	30.0
Chloromethane		85.7	23.8	166.5	3.2	30.0
Vinyl chloride		90.0	43.5	149.1	1.7	30.0
Bromomethane		87.4	56.8	151.3	0.8	30.0
Chloroethane		89.4	53.4	149.4	2.6	30.0
Trichlorofluoromethane		95.5	59.7	151.8	6.2	30.0
1,1-Dichloroethene		102.5	69.6	139.4	8.6	30.0
Methylene chloride		95.3	73.3	121.1	2.9	30.0
trans-1,2-Dichloroethene		98.0	73.6	129.3	7.2	30.0
1,1-Dichloroethane		96.2	71.5	126.2	5.7	30.0
cis-1,2-Dichloroethene		91.6	76.6	122.1	4.4	30.0
Tetrahydrofuran		104.3	59.0	117.9	0.2	30.0
Chloroform		94.6	78.4	124.0	4.3	30.0
Bromochloromethane		92.3	78.2	120.8	1.8	30.0
1,1,1-Trichloroethane		98.1	79.4	130.9	8.1	30.0
4-Methyl-2-pentanone (MIBK)		99.3	71.6	125.2	3.7	30.0
2-Hexanone		100.9	55.4	136.9	2.4	30.0
Carbon tetrachloride		97.5	72.6	133.0	9.5	30.0
Benzene		92.7	79.9	124.9	4.6	30.0
1,2-Dichloroethane		90.6	76.0	126.3	2.1	30.0
Trichloroethene		95.2	79.7	124.2	7.2	30.0
1,2-Dichloropropane		98.5	78.6	126.4	4.5	30.0
Bromodichloromethane		95.8	80.4	128.2	3.2	30.0
Dibromomethane		93.5	76.9	122.1	2.0	30.0
cis-1,3-Dichloropropene		97.6	79.8	129.9	3.9	30.0
Toluene		95.1	79.8	124.5	6.2	30.0
trans-1,3-Dichloropropene		99.5	74.0	131.3	4.6	30.0
1,1,2-Trichloroethane		94.1	78.7	123.1	2.1	30.0
Tetrachloroethene		93.5	74.5	124.5	7.2	30.0
trans-1,4-Dichloro-2-butene		107.6	68.6	135.4	0.7	30.0
Dibromochloromethane		96.8	74.6	127.2	2.6	30.0
1,2-Dibromoethane		94.0	70.3	133.7	4.1	30.0
Chlorobenzene		93.1	79.2	122.7	5.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201210W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 201210A7.LCSDW10B, Parent Sample ID: 201210A7.LCSW10A

Run in Batch: 201210A7, Run Date: 12/10/2020 13:21, Prep Date: 12/10/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		96.1	80.3	128.2	3.6	30.0
Ethylbenzene		94.3	79.5	129.1	6.7	30.0
p,m-Xylene		95.0	79.4	132.2	6.4	30.0
o-Xylene		94.3	80.2	131.0	4.3	30.0
Styrene		92.8	69.5	126.7	4.1	30.0
Isopropylbenzene		96.5	74.4	121.5	7.4	30.0
Bromoform		98.8	69.4	128.0	2.5	30.0
1,1,2,2-Tetrachloroethane		97.6	79.8	126.3	3.3	30.0
1,2,3-Trichloropropane		95.5	78.3	138.8	0.2	30.0
n-Propylbenzene		96.3	82.0	130.7	7.8	30.0
Bromobenzene		92.9	78.7	124.6	4.1	30.0
1,3,5-Trimethylbenzene		97.1	81.3	128.9	6.5	30.0
tert-Butylbenzene		97.0	80.7	128.9	7.4	30.0
1,2,4-Trimethylbenzene		96.4	81.4	130.8	6.1	30.0
sec-Butylbenzene		98.5	77.4	129.8	8.3	30.0
p-Isopropyltoluene		100.1	79.8	137.5	7.9	30.0
1,3-Dichlorobenzene		94.3	77.0	131.3	4.9	30.0
1,4-Dichlorobenzene		91.9	20.7	137.7	4.9	30.0
1,2-Dichlorobenzene		94.9	10.0	166.2	4.4	30.0
1,2,3-Trimethylbenzene		94.8	76.3	124.2	0.6	30.0
n-Butylbenzene		99.7	80.0	133.3	9.7	30.0
Hexachloroethane		99.5	23.8	138.1	3.1	30.0
1,2-Dibromo-3-chloropropane		105.7	21.2	189.4	1.2	30.0
1,2,4-Trichlorobenzene		101.9	27.4	143.4	4.3	30.0
1,2,3-Trichlorobenzene		102.1	75.4	131.4	3.6	30.0
Naphthalene		99.7	32.9	135.8	1.5	30.0
2-Methylnaphthalene		103.6	25.5	165.5	1.3	30.0

Merit Laboratories Login Checklist

Lab Set ID:S19673

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30042872.04700 / Racer Lansing

Submitted: 12/03/2020 16:20 Login User: REJ

Attention: Tiffany Linder

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

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

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 3.0 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

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

Client Review By: _____ Date: _____



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 Phone (517) 332-0167 Fax (517) 332-4034
 www.meritlabs.com

C.O.C. PAGE # 1 OF 1

132266

REPORT TO

CHAIN OF CUSTODY RECORD

Plant 6

INVOICE TO

CONTACT NAME *Tiffany Linder*
 COMPANY *Arcadis*
 ADDRESS *28550 Cabot Drive, Suite 500*
 CITY *Novi* STATE *MI* ZIP CODE *48377*
 PHONE NO. *810-225-1928* FAX NO. _____ P.O. NO. *30042872.04700*
 E-MAIL ADDRESS *Tiffany.Linder@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 *30042872.04700/RACER Lansing* SAMPLER(S) - PLEASE PRINT/SIGN NAME *Austin Westhuis/Arcadis*
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

VOCs 82605 SIMS

Certifications
 OHIO VAP Drinking Water
 DoD NPDES

Project Locations
 Detroit New York
 Other *MI*

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

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	VOCs	82605	SIMS
	DATE	TIME													
<i>19673.01</i>	<i>12/3/20</i>	<i>1005</i>	<i>MW-20-131-120320</i>	<i>GW</i>	<i>3</i>		<i>3</i>						<i>X</i>		
<i>.02</i>	<i>12/3/20</i>	<i>1050</i>	<i>MW-20-132-120320</i>	<i>GW</i>	<i>3</i>		<i>3</i>						<i>X</i>		
<i>.03</i>	<i>12/3/20</i>	---	<i>Trip Blank</i>	<i>GW</i>	<i>1</i>		<i>1</i>						<i>X</i>		

RELINQUISHED BY: *Arcadis* Sampler DATE *12/3/20* TIME *1620*
 RECEIVED BY: *Merit* DATE *12/3/20* TIME *1620*
 RELINQUISHED BY: *Drpbox* DATE *12/3/20* TIME *1620*
 RECEIVED BY: *mp* DATE *12/3/20* TIME *1620*

RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

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

NOTES *30* TEMP. ON ARRIVAL _____

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



Analytical Laboratory Report

Report ID: S19474.01(01)+QC01
Generated on 12/03/2020

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Additional Contacts: Alex Villhauer, Marina Samp, Kaitlyn Voet

Report produced by

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

Report Summary

Lab Sample ID(s): S19474.01
Project: 30042872.00102 / RACER Lansing
Collected Date(s): 11/24/2020
Submitted Date/Time: 11/24/2020 14:50
Sampled by: Austin Westhuis
P.O. #: 30042872.00102

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

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

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

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

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

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

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

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

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

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

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S19474.01	SVMP-20-01(5-10)	Groundwater	11/24/20 11:30



Analytical Laboratory Report

Lab Sample ID: S19474.01

Sample Tag: SVMP-20-01(5-10)

Collected Date/Time: 11/24/2020 11:30

Matrix: Groundwater

COC Reference: 128248

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	12/01/20 09:35	JML	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/01/20 00:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	3	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	4	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S19474.01 (continued)

Sample Tag: SVMP-20-01(5-10)

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 12/01/20 00:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Quality Control Report

Report ID: S19474.01(01)+QC01
Generated on 12/03/2020

Report to
Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: 248-994-2272 FAX:

Report Summary

Lab Sample ID(s): S19474.01
Project: 30042872.00102 / RACER Lansing
Submitted Date/Time: 11/24/2020 14:50
Sampled by: Austin Westhuis
P.O. #: 30042872.00102

QC Report Sections

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Analysis Summary (Page 9)
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Surrogates per QC Sample (Page 12)
Internal Standards per Lab Sample (Page 13)
Internal Standards per QC Sample (Page 14)
Batch QC Results (Pages 15-20)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S19474.01

Sample Tag: SVMP-20-01(5-10)

Collected Date/Time: 11/24/2020 11:30

Matrix: Groundwater

COC Reference: 128248

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	12/01/20 00:09	201130B7	VF201130W3	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF201130W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S19474.01	Volatile Organics - DEQ List	SW5030C/8260C	12/01/20 00:09	201130B7

QC Report - Surrogates per Lab Sample

Lab Sample ID: S19474.01

Sample Tag: SVMP-20-01(5-10)

Collected Date/Time: 11/24/2020 11:30

Matrix: Groundwater

COC Reference: 128248

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 201130B7, Run Date: 12/01/2020 00:09, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.3	80.0	124.0
1,2-Dichloroethane-D4		103.0	72.0	125.0
Toluene-D8		100.6	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF201130W3

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 201130B7.BLKW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 23:22, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.6	80.0	124.0
1,2-Dichloroethane-D4		94.3	72.0	125.0
Toluene-D8		99.5	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:27, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		100.1	80.0	124.0
1,2-Dichloroethane-D4		109.3	72.0	125.0
Toluene-D8		102.3	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 201130B7.LCSDW30C, Parent Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:50, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		100.2	80.0	124.0
1,2-Dichloroethane-D4		110.3	72.0	125.0
Toluene-D8		101.9	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 201130B7.1935609M, Parent Sample ID: S19356.08

Run in Batch: 201130B7, Run Date: 11/30/2020 22:13, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		99.9	80.0	124.0
1,2-Dichloroethane-D4		104.7	72.0	125.0
Toluene-D8		100.7	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 201130B7.1935610N, Parent Sample ID: 201130B7.1935609M

Run in Batch: 201130B7, Run Date: 11/30/2020 22:36, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		100.2	80.0	124.0
1,2-Dichloroethane-D4		97.9	72.0	125.0
Toluene-D8		100.5	89.0	112.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S19474.01

Sample Tag: SVMP-20-01(5-10)

Collected Date/Time: 11/24/2020 11:30

Matrix: Groundwater

COC Reference: 128248

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 201130B7, Run Date: 12/01/2020 00:09, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		104.8	50.0	200.0
1,4-Difluorobenzene		99.3	50.0	200.0
Chlorobenzene-D5		99.1	50.0	200.0
1,4-Dichlorobenzene-D4		102.8	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF201130W3

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 201130B7.BLKW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 23:22, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		103.4	50.0	200.0
1,4-Difluorobenzene		98.3	50.0	200.0
Chlorobenzene-D5		95.0	50.0	200.0
1,4-Dichlorobenzene-D4		95.9	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:27, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		101.9	50.0	200.0
1,4-Difluorobenzene		101.0	50.0	200.0
Chlorobenzene-D5		101.5	50.0	200.0
1,4-Dichlorobenzene-D4		100.2	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 201130B7.LCSDW30C, Parent Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:50, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		99.8	50.0	200.0
1,4-Difluorobenzene		98.2	50.0	200.0
Chlorobenzene-D5		97.6	50.0	200.0
1,4-Dichlorobenzene-D4		97.4	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 201130B7.1935609M, Parent Sample ID: S19356.08

Run in Batch: 201130B7, Run Date: 11/30/2020 22:13, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		99.8	50.0	200.0
1,4-Difluorobenzene		98.2	50.0	200.0
Chlorobenzene-D5		96.5	50.0	200.0
1,4-Dichlorobenzene-D4		95.1	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 201130B7.1935610N, Parent Sample ID: 201130B7.1935609M

Run in Batch: 201130B7, Run Date: 11/30/2020 22:36, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		101.3	50.0	200.0
1,4-Difluorobenzene		98.7	50.0	200.0
Chlorobenzene-D5		97.0	50.0	200.0
1,4-Dichlorobenzene-D4		96.2	50.0	200.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201130W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 201130B7.BLKW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 23:22, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201130W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 201130B7.BLKW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 23:22, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:27, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		120.5	67.4	121.2
Acetone		148.6	29.9	161.5
Methyl iodide		113.5	68.8	116.4
Carbon disulfide		107.5	63.8	137.4
tert-Methyl butyl ether (MTBE)		116.4	73.2	122.4
Acrylonitrile	*	132.3	69.9	128.9
2-Butanone (MEK)		123.9	44.0	134.4
Dichlorodifluoromethane		95.9	10.0	222.8
Chloromethane		110.7	23.8	166.5
Vinyl chloride		114.3	43.5	149.1
Bromomethane		113.6	56.8	151.3
Chloroethane		117.2	53.4	149.4
Trichlorofluoromethane		118.0	59.7	151.8
1,1-Dichloroethene		114.1	69.6	139.4
Methylene chloride		114.0	73.3	121.1
trans-1,2-Dichloroethene		113.4	73.6	129.3
1,1-Dichloroethane		117.5	71.5	126.2
cis-1,2-Dichloroethene		114.8	76.6	122.1
Tetrahydrofuran	*	127.2	59.0	117.9
Chloroform		118.5	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201130W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:27, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		114.4	78.2	120.8
1,1,1-Trichloroethane		117.2	79.4	130.9
4-Methyl-2-pentanone (MIBK)		112.0	71.6	125.2
2-Hexanone		112.0	55.4	136.9
Carbon tetrachloride		108.4	72.6	133.0
Benzene		106.7	79.9	124.9
1,2-Dichloroethane		105.4	76.0	126.3
Trichloroethene		111.7	79.7	124.2
1,2-Dichloropropane		111.1	78.6	126.4
Bromodichloromethane		110.8	80.4	128.2
Dibromomethane		106.1	76.9	122.1
cis-1,3-Dichloropropene		105.9	79.8	129.9
Toluene		108.9	79.8	124.5
trans-1,3-Dichloropropene		107.1	74.0	131.3
1,1,2-Trichloroethane		110.3	78.7	123.1
Tetrachloroethene	*	181.8	74.5	124.5
trans-1,4-Dichloro-2-butene		125.1	68.6	135.4
Dibromochloromethane		105.7	74.6	127.2
1,2-Dibromoethane		101.1	70.3	133.7
Chlorobenzene		101.3	79.2	122.7
1,1,1,2-Tetrachloroethane		104.4	80.3	128.2
Ethylbenzene		101.5	79.5	129.1
p,m-Xylene		102.4	79.4	132.2
o-Xylene		103.5	80.2	131.0
Styrene		102.7	69.5	126.7
Isopropylbenzene		102.7	74.4	121.5
Bromoform		108.6	69.4	128.0
1,1,2,2-Tetrachloroethane		99.9	79.8	126.3
1,2,3-Trichloropropane		104.8	78.3	138.8
n-Propylbenzene		101.4	82.0	130.7
Bromobenzene		100.6	78.7	124.6
1,3,5-Trimethylbenzene		102.6	81.3	128.9
tert-Butylbenzene		103.1	80.7	128.9
1,2,4-Trimethylbenzene		102.4	81.4	130.8
sec-Butylbenzene		102.7	77.4	129.8
p-Isopropyltoluene		102.9	79.8	137.5
1,3-Dichlorobenzene		100.2	77.0	131.3
1,4-Dichlorobenzene		99.1	20.7	137.7
1,2-Dichlorobenzene		102.1	10.0	166.2
1,2,3-Trimethylbenzene		102.4	76.3	124.2
n-Butylbenzene		100.6	80.0	133.3
Hexachloroethane		103.0	23.8	138.1
1,2-Dibromo-3-chloropropane		110.2	21.2	189.4
1,2,4-Trichlorobenzene		102.5	27.4	143.4
1,2,3-Trichlorobenzene		104.5	75.4	131.4
Naphthalene		104.5	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201130W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:27, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		108.2	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 201130B7.LCSDW30C, Parent Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:50, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		121.0	67.4	121.2	0.4	30.0
Acetone		147.3	29.9	161.5	0.9	30.0
Methyl iodide		115.1	68.8	116.4	1.4	30.0
Carbon disulfide		108.5	63.8	137.4	1.0	30.0
tert-Methyl butyl ether (MTBE)		118.5	73.2	122.4	1.8	30.0
Acrylonitrile	*	131.4	69.9	128.9	0.7	30.0
2-Butanone (MEK)		121.0	44.0	134.4	2.4	30.0
Dichlorodifluoromethane		97.7	10.0	222.8	1.9	30.0
Chloromethane		110.0	23.8	166.5	0.7	30.0
Vinyl chloride		116.0	43.5	149.1	1.5	30.0
Bromomethane		114.1	56.8	151.3	0.5	30.0
Chloroethane		118.1	53.4	149.4	0.8	30.0
Trichlorofluoromethane		122.2	59.7	151.8	3.5	30.0
1,1-Dichloroethene		116.0	69.6	139.4	1.7	30.0
Methylene chloride		115.0	73.3	121.1	0.9	30.0
trans-1,2-Dichloroethene		114.3	73.6	129.3	0.8	30.0
1,1-Dichloroethane		119.6	71.5	126.2	1.8	30.0
cis-1,2-Dichloroethene		115.4	76.6	122.1	0.5	30.0
Tetrahydrofuran	*	123.3	59.0	117.9	3.1	30.0
Chloroform		119.6	78.4	124.0	0.9	30.0
Bromochloromethane		115.2	78.2	120.8	0.7	30.0
1,1,1-Trichloroethane		119.7	79.4	130.9	2.1	30.0
4-Methyl-2-pentanone (MIBK)		113.4	71.6	125.2	1.2	30.0
2-Hexanone		110.2	55.4	136.9	1.7	30.0
Carbon tetrachloride		111.6	72.6	133.0	2.9	30.0
Benzene		107.3	79.9	124.9	0.6	30.0
1,2-Dichloroethane		106.2	76.0	126.3	0.8	30.0
Trichloroethene	*	130.5	79.7	124.2	15.5	30.0
1,2-Dichloropropane		111.8	78.6	126.4	0.7	30.0
Bromodichloromethane		112.4	80.4	128.2	1.5	30.0
Dibromomethane		107.2	76.9	122.1	1.0	30.0
cis-1,3-Dichloropropene		107.1	79.8	129.9	1.1	30.0
Toluene		109.4	79.8	124.5	0.5	30.0
trans-1,3-Dichloropropene		106.2	74.0	131.3	0.9	30.0
1,1,2-Trichloroethane		112.1	78.7	123.1	1.6	30.0
Tetrachloroethene	*	193.6	74.5	124.5	6.3	30.0
trans-1,4-Dichloro-2-butene		121.5	68.6	135.4	3.0	30.0
Dibromochloromethane		107.8	74.6	127.2	2.0	30.0
1,2-Dibromoethane		103.4	70.3	133.7	2.2	30.0
Chlorobenzene		103.2	79.2	122.7	1.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201130W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 201130B7.LCSDW30C, Parent Sample ID: 201130B7.LCSW30C

Run in Batch: 201130B7, Run Date: 11/30/2020 21:50, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		107.3	80.3	128.2	2.7	30.0
Ethylbenzene		104.0	79.5	129.1	2.4	30.0
p,m-Xylene		104.7	79.4	132.2	2.3	30.0
o-Xylene		105.7	80.2	131.0	2.1	30.0
Styrene		104.7	69.5	126.7	1.9	30.0
Isopropylbenzene		105.1	74.4	121.5	2.3	30.0
Bromoform		109.8	69.4	128.0	1.2	30.0
1,1,2,2-Tetrachloroethane		81.1	79.8	126.3	20.8	30.0
1,2,3-Trichloropropane		107.1	78.3	138.8	2.1	30.0
n-Propylbenzene		104.4	82.0	130.7	2.9	30.0
Bromobenzene		102.9	78.7	124.6	2.3	30.0
1,3,5-Trimethylbenzene		105.6	81.3	128.9	2.9	30.0
tert-Butylbenzene		106.1	80.7	128.9	2.8	30.0
1,2,4-Trimethylbenzene		104.1	81.4	130.8	1.6	30.0
sec-Butylbenzene		105.6	77.4	129.8	2.7	30.0
p-Isopropyltoluene		104.1	79.8	137.5	1.1	30.0
1,3-Dichlorobenzene		101.4	77.0	131.3	1.2	30.0
1,4-Dichlorobenzene		99.9	20.7	137.7	0.8	30.0
1,2-Dichlorobenzene		104.1	10.0	166.2	1.9	30.0
1,2,3-Trimethylbenzene		103.5	76.3	124.2	1.1	30.0
n-Butylbenzene		102.0	80.0	133.3	1.4	30.0
Hexachloroethane		105.7	23.8	138.1	2.5	30.0
1,2-Dibromo-3-chloropropane		111.0	21.2	189.4	0.7	30.0
1,2,4-Trichlorobenzene		104.4	27.4	143.4	1.8	30.0
1,2,3-Trichlorobenzene		106.1	75.4	131.4	1.5	30.0
Naphthalene		105.8	32.9	135.8	1.2	30.0
2-Methylnaphthalene		110.8	25.5	165.5	2.4	30.0

Matrix Spike (MS)

Lab Sample ID: 201130B7.1935609M, Parent Sample ID: S19356.08

Run in Batch: 201130B7, Run Date: 11/30/2020 22:13, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzene		98.2	79.9	124.9
Toluene		101.6	79.8	124.5
Ethylbenzene		98.2	79.5	129.1
p,m-Xylene		97.2	79.4	132.2
o-Xylene		99.7	80.2	131.0
1,3,5-Trimethylbenzene		98.3	81.3	128.9
1,2,4-Trimethylbenzene		99.4	81.4	130.8
Naphthalene		105.2	32.9	135.8
2-Methylnaphthalene		107.3	25.5	165.5

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF201130W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD)

Lab Sample ID: 201130B7.1935610N, Parent Sample ID: 201130B7.1935609M

Run in Batch: 201130B7, Run Date: 11/30/2020 22:36, Prep Date: 11/30/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzene		99.0	79.9	124.9	0.9	30.0
Toluene		101.5	79.8	124.5	0.2	30.0
Ethylbenzene		97.7	79.5	129.1	0.4	30.0
p,m-Xylene		97.2	79.4	132.2	0.1	30.0
o-Xylene		98.5	80.2	131.0	1.3	30.0
1,3,5-Trimethylbenzene		97.9	81.3	128.9	0.3	30.0
1,2,4-Trimethylbenzene		98.3	81.4	130.8	1.1	30.0
Naphthalene		102.2	32.9	135.8	2.9	30.0
2-Methylnaphthalene		104.3	25.5	165.5	2.8	30.0

Merit Laboratories Login Checklist

Lab Set ID:S19474

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30042872.00102 / RACER Lansing

Submitted: 11/24/2020 14:50 Login User: MMC

Attention: Tiffany Linder

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

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

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 4.1 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Do water VOC or TOX bottles contain headspace |

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

Client Review By: _____ Date: _____



REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Alex Villhauer
 COMPANY Arcadis
 ADDRESS 28550 Cabot Drive, Suite 500
 CITY Novi STATE MI ZIP CODE 48377
 PHONE NO. 248-994-2240 FAX NO. _____ P.O. NO. 30042872.00102
 E-MAIL ADDRESS Alex.Villhauer@arcadis.com QUOTE NO. _____

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

PROJECT NO./NAME 30042872.00102 / RACER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME Austin Westhuis / Axel Wul
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

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

Containers & Preservatives

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	VOCs 8260	Certifications		Project Locations	Special Instructions
	DATE	TIME												<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water		
19474.01	11/24/20	1130	SVMP-20-01 (5-10)	GW	3		3						X	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	<input type="checkbox"/> Detroit <input type="checkbox"/> New York	<input checked="" type="checkbox"/> Other <u>MI</u>

RELINQUISHED BY: Axel Wul / Arcadis Sampler DATE 11/24/20 TIME 1450
 RECEIVED BY: Merit Drop Box DATE 11/24/20 TIME 1450
 RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

RELINQUISHED BY: Merit Drop Box DATE 11/24/2020 TIME 1450
 RECEIVED BY: M Calco DATE 11/24/2020 TIME 1450
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____ NOTES: TEMP ON ARRIVAL 4.1
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____



Thursday, December 17, 2020

Fibertec Project Number: 99382
Project Identification: RACER Lansing (30042872.00102) /30042872.00102
Submittal Date: 12/09/2020

Ms. Tiffany Linder
Arcadis U.S., Inc. - Novi
28550 Cabot Drive
Suite 500
Novi, MI 48377

Dear Ms. Linder,

Thank you for selecting Fibertec Environmental Services as your analytical laboratory. The samples you submitted have been analyzed in accordance with NELAC standards and the results compiled in the attached report. Any exceptions to NELAC compliance are noted in the report. These results apply only to those samples submitted. Please note TO-15 samples will be disposed of 7 calendar days after the reporting date. All other samples will be disposed of 30 days after the reporting date.

If you have any questions regarding these results or if we may be of further assistance to you, please contact me at (517) 699-0345.

Sincerely,

By Sharon Rakow at 11:47 AM, Dec 17, 2020

For Daryl P. Strandbergh
Laboratory Director

Enclosures

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

T: (517) 699-0345
T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584



Analytical Laboratory Report
Laboratory Project Number: 99382
Laboratory Sample Number: 99382-001

Order: 99382
Page: 2 of 6
Date: 12/17/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SVMP-20-01 (120920)	Chain of Custody: 192767
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 1	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:41

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99382-001 **Matrix: Air**
Description: SVMP-20-01 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
2. Benzene	U		µg/m3	19	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
5. Bromoform	U		µg/m3	62	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
6. Bromomethane	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
12. Chloroethane	U		µg/m3	16	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
14. Chloromethane	U		µg/m3	12	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
20. Dichlorodifluoromethane	U		µg/m3	30	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
33. n-Heptane	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
35. n-Hexane	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99382
Laboratory Sample Number: 99382-001

Order: 99382
Page: 3 of 6
Date: 12/17/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: SVMP-20-01 (120920)	Chain of Custody: 192767
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 1	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: 14:41

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **99382-001** Matrix: **Air**
Method: EPA TO-15 Description: **SVMP-20-01 (120920)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
41. MTBE	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
43. Styrene	U		µg/m3	51	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
47. Toluene	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
51. Trichloroethene	9.5		µg/m3	1.6	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
59. o-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 60. Xylenes	U		µg/m3	100	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

Surrogate Summary		<u>Control Limits</u>	<u>Batch</u>
4-Bromofluorobenzene(S)	102	% 80-120	VK20L11A

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Analytical Laboratory Report
Laboratory Project Number: 99382
Laboratory Sample Number: 99382-002

Order: 99382
Page: 4 of 6
Date: 12/17/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: DUP-01 (120920)	Chain of Custody: 192767
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 2	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: NA

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac)
Method: EPA TO-15

Aliquot ID: 99382-002 **Matrix: Air**
Description: DUP-01 (120920)

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
‡ 1. Acetone	U		µg/m3	57	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
2. Benzene	U		µg/m3	19	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
3. Benzyl Chloride	U		µg/m3	6.2	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
4. Bromodichloromethane	U		µg/m3	8.0	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
5. Bromoform	U		µg/m3	62	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
6. Bromomethane	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
7. 1,3-Butadiene	U		µg/m3	0.66	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
8. 2-Butanone	U		µg/m3	35	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 9. Carbon Disulfide	U		µg/m3	37	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
10. Carbon Tetrachloride	U		µg/m3	7.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
11. Chlorobenzene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
12. Chloroethane	U		µg/m3	16	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
13. Chloroform	U		µg/m3	5.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
14. Chloromethane	U		µg/m3	12	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
15. Cyclohexane	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
16. Dibromochloromethane	U		µg/m3	4.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
17. 1,2-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
18. 1,3-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
19. 1,4-Dichlorobenzene	U		µg/m3	36	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
20. Dichlorodifluoromethane	U		µg/m3	30	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
21. 1,1-Dichloroethane	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
22. 1,2-Dichloroethane	U		µg/m3	4.9	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
23. 1,1-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
24. cis-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
25. trans-1,2-Dichloroethene	U		µg/m3	24	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
26. 1,2-Dichloropropane	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
27. cis-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
28. trans-1,3-Dichloropropene	U		µg/m3	27	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
29. 1,4-Dioxane	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 30. Ethyl Acetate	U		µg/m3	43	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
31. Ethylbenzene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
32. Ethylene Dibromide	U		µg/m3	0.92	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
33. n-Heptane	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
34. Hexachlorobutadiene	U		µg/m3	5.1	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
35. n-Hexane	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 36. 2-Hexanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 37. Isopropanol	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

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Analytical Laboratory Report
Laboratory Project Number: 99382
Laboratory Sample Number: 99382-002

Order: 99382
 Page: 5 of 6
 Date: 12/17/20

Client Identification: Arcadis U.S., Inc. - Novi	Sample Description: DUP-01 (120920)	Chain of Custody: 192767
Client Project Name: RACER Lansing (30042872.00102)	Sample No: 2	Collect Date: 12/09/20
Client Project No: 30042872.00102	Sample Matrix: Air	Collect Time: NA

Sample Comments:

Definitions: Q: Qualifier (see definitions at end of report) NA: Not Applicable ‡: Parameter not included in NELAC Scope of Analysis.

TO-15 (Bottle-Vac) Aliquot ID: **99382-002** Matrix: **Air**
 Method: **EPA TO-15** Description: **DUP-01 (120920)**

Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Preparation		Analysis		
						P. Date	P. Batch	A. Date	A. Batch	Init.
38. 4-Methyl-2-pentanone	U		µg/m3	49	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
39. Methylene Chloride	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 40. 2-Methylnaphthalene	U		µg/m3	140	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
41. MTBE	U		µg/m3	22	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 42. Naphthalene	U		µg/m3	28	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
43. Styrene	U		µg/m3	51	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
44. 1,1,2,2-Tetrachloroethane	U		µg/m3	3.3	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
45. Tetrachloroethene	U		µg/m3	41	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 46. Tetrahydrofuran	U		µg/m3	3.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
47. Toluene	U		µg/m3	23	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
48. 1,2,4-Trichlorobenzene	U		µg/m3	89	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
49. 1,1,1-Trichloroethane	U		µg/m3	33	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
50. 1,1,2-Trichloroethane	U		µg/m3	6.5	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
51. Trichloroethene	U		µg/m3	1.6	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
52. Trichlorofluoromethane	U		µg/m3	34	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
53. 1,1,2-Trichlorotrifluoroethane	U		µg/m3	46	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
54. 1,2,4-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
55. 1,3,5-Trimethylbenzene	U		µg/m3	29	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
56. Vinyl Acetate	U		µg/m3	42	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
57. Vinyl Chloride	U		µg/m3	15	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
58. m&p-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
59. o-Xylene	U		µg/m3	52	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM
‡ 60. Xylenes	U		µg/m3	100	4.0	12/11/20	VK20L11A	12/11/20	VK20L11A	JLM

Surrogate Summary		<u>Control Limits</u>	<u>Batch</u>
4-Bromofluorobenzene(S)	103	% 80-120	VK20L11A

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Definitions/ Qualifiers:

- A:** Spike recovery or precision unusable due to dilution.
- B:** The analyte was detected in the associated method blank.
- E:** The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
- J:** The concentration is an estimated value.
- M:** Modified Method
- U:** The analyte was not detected at or above the reporting limit.
- X:** Matrix Interference has resulted in a raised reporting limit or distorted result.
- W:** Results reported on a wet-weight basis.
- ***: Value reported is outside QC limits
- D:** The sample or extract was analyzed at a DF greater than 1.

Exception Summary:

Analysis Locations:

All analyses performed in Holt.



Accreditation Number(s):

T104704518-19-8 (TX)

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T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584

Plant 6

Client Name: <i>Arcadis</i>				MATRIX (SEE RIGHT CORNER FOR CODE)	# OF CONTAINERS	TO-15	PARAMETERS										Matrix Code		Deliverables	
Contact Person: <i>Tiffany Linder</i>							HOLD SAMPLE	S	Soil	GW	Ground Water							Level 2		
Project Name/ Number: <i>RALER Lansing / 30042872.00102</i>								A	Air	SW	Surface Water							Level 3		
Email distribution list: <i>Tiffany.Linder@arcadis.com</i>							O	Oil	WW	Waste Water							Level 4			
Quote#							P	Wipe	X	Other: Specify							EDD			
Purchase Order#							Remarks:													
Date	Time	Sample #	Client Sample Descriptor																	
<i>12/9/20</i>	<i>1441</i>	<i>1</i>	<i>svmp-20-01 (120920)</i>	<i>A</i>	<i>1</i>	<i>X</i>														
<i>12/9/20</i>	<i>---</i>	<i>2</i>	<i>Dup-01 (120920)</i>	<i>A</i>	<i>1</i>	<i>X</i>														

Received By Lab
DEC 09 2020
initials: CI

Comments:

Sampled/Relinquished By: <i>Austin Westhuis / Ann Linder / Arcadis</i>	Date/ Time <i>12/9/20</i>	Received By: <i>Donald Richmond / 22 Dis / Arcadis</i>
Relinquished By: <i>Donald Richmond / Dan Richmond / Arcadis</i>	Date/ Time <i>12/9/20 15:42</i>	Received By: <i>Car dh</i>
Relinquished By:	Date/ Time	Received By Laboratory:

Turnaround Time ALL RESULTS WILL BE SENT BY THE END OF THE BUSINESS DAY				LAB USE ONLY	
<input type="checkbox"/> 1 bus. day	<input type="checkbox"/> 2 bus. days	<input type="checkbox"/> 3 bus. days	<input type="checkbox"/> 4 bus. days	Fibertec project number: <i>94382</i>	
<input checked="" type="checkbox"/> 5-7 bus. days (standard)	Other (specify time/date requirement): _____			Temperature upon receipt at Lab: <i>Room Temp</i>	

VK20L11A: Method Blank (MB)

EPA TO-15

Run Time: VK20L11A.MB 12/11/2020 13:41 [VK20L11A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Acetone	U		57
Benzene	U		19
Benzyl Chloride	U		6.2
Bromodichloromethane	U		8.0
Bromoform	U		62
Bromomethane	U		23
1,3-Butadiene	U		0.66
2-Butanone	U		35
Carbon Disulfide	U		37
Carbon Tetrachloride	U		7.5
Chlorobenzene	U		28
Chloroethane	U		16
Chloroform	U		5.9
Chloromethane	U		12
Cyclohexane	U		41
Dibromochloromethane	U		4.1
1,2-Dichlorobenzene	U		36
1,3-Dichlorobenzene	U		36
1,4-Dichlorobenzene	U		36
Dichlorodifluoromethane	U		30
1,1-Dichloroethane	U		24
1,2-Dichloroethane	U		4.9
1,1-Dichloroethene	U		24
cis-1,2-Dichloroethene	U		24
trans-1,2-Dichloroethene	U		24
1,2-Dichloropropane	U		28
cis-1,3-Dichloropropene	U		27
trans-1,3-Dichloropropene	U		27
1,4-Dioxane	U		22
Ethyl Acetate	U		43
Ethylbenzene	U		52
Ethylene Dibromide	U		0.92
n-Heptane	U		49

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

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VK20L11A: Method Blank (MB)

EPA TO-15

Run Time: VK20L11A.MB 12/11/2020 13:41 [VK20L11A]

Analyte	MB Result	MB Qualifier	MB RDL
	µg/m3		µg/m3
Hexachlorobutadiene	U		5.1
n-Hexane	U		42
2-Hexanone	U		49
Isopropanol	U		29
4-Methyl-2-pentanone	U		49
Methylene Chloride	U		42
2-Methylnaphthalene	U		140
MTBE	U		22
Naphthalene	U		28
Styrene	U		51
1,1,2,2-Tetrachloroethane	U		3.3
Tetrachloroethene	U		41
Tetrahydrofuran	U		3.5
Toluene	U		23
1,2,4-Trichlorobenzene	U		89
1,1,1-Trichloroethane	U		33
1,1,2-Trichloroethane	U		6.5
Trichloroethene	U		1.6
Trichlorofluoromethane	U		34
1,1,2-Trichlorotrifluoroethane	U		46
1,2,4-Trimethylbenzene	U		29
1,3,5-Trimethylbenzene	U		29
Vinyl Acetate	U		42
Vinyl Chloride	U		15
m&p-Xylene	U		52
o-Xylene	U		52
4-Bromofluorobenzene(S)	101		80-120

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VK20L11A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20L11A.LCS: 12/11/2020 10:53 [VK20L11A] VK20L11A.LCSD: 12/11/2020 11:48 [VK20L11A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Acetone	31.1	30.3	97	70-130		31.1	30.6	99		2	20	
Benzene	41.2	37.6	91	70-130		41.2	38.2	93		2	20	
Benzyl Chloride	65.7	74.0	113	70-150		65.7	74.5	113		0	20	
Bromodichloromethane	84.7	95.1	112	70-130		84.7	95.6	113		1	20	
Bromoform	134	141	106	70-138		134	142	106		0	20	
Bromomethane	51.7	50.0	97	70-133		51.7	49.1	95		2	20	
1,3-Butadiene	28.6	29.3	102	70-134		28.6	29.3	102		0	20	
2-Butanone	37.8	36.1	95	70-130		37.8	36.5	96		1	20	
Carbon Disulfide	38.8	37.7	97	70-130		38.8	37.9	98		1	20	
Carbon Tetrachloride	81.7	97.3	119	70-131		81.7	97.2	119		0	20	
Chlorobenzene	59.5	52.9	89	70-130		59.5	53.5	90		1	20	
Chloroethane	35.2	34.1	97	70-130		35.2	34.9	99		2	20	
Chloroform	64.0	68.0	106	70-130		64.0	67.7	106		0	20	
Chloromethane	26.9	26.2	97	70-130		26.9	26.7	99		2	20	
Cyclohexane	43.9	41.1	94	70-130		43.9	41.3	94		0	20	
Dibromochloromethane	112	115	102	70-135		112	116	104		2	20	
1,2-Dichlorobenzene	75.3	71.2	95	70-130		75.3	72.4	96		1	20	
1,3-Dichlorobenzene	76.0	72.2	95	70-131		76.0	72.6	96		1	20	
1,4-Dichlorobenzene	75.6	74.6	99	70-134		75.6	75.0	99		0	20	
Dichlorodifluoromethane	64.7	74.4	115	70-132		64.7	74.7	115		0	20	
1,1-Dichloroethane	51.4	49.6	96	70-130		51.4	49.9	97		1	20	
1,2-Dichloroethane	50.8	62.0	122	70-130		50.8	62.1	122		0	20	
1,1-Dichloroethene	51.0	54.9	108	70-133		51.0	54.8	107		1	20	
cis-1,2-Dichloroethene	50.4	52.1	103	70-130		50.4	52.5	104		1	20	
trans-1,2-Dichloroethene	50.8	53.1	105	70-130		50.8	53.3	105		0	20	
1,2-Dichloropropane	60.3	58.0	96	70-130		60.3	58.4	97		1	20	
cis-1,3-Dichloropropene	58.8	63.2	108	70-131		58.8	64.0	109		1	20	
trans-1,3-Dichloropropene	57.7	66.1	115	70-134		57.7	66.4	115		0	20	
1,4-Dioxane	46.6	47.8	103	70-130		46.6	48.5	104		1	20	
Ethyl Acetate	45.7	43.2	95	70-130		45.7	43.7	96		1	20	
Ethylbenzene	54.1	51.9	96	70-130		54.1	52.2	96		0	20	
Ethylene Dibromide	101	94.4	94	70-130		101	94.4	94		0	20	
n-Heptane	52.7	50.8	96	70-132		52.7	51.4	97		1	20	

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VK20L11A: Laboratory Control Sample (LCS)/Laboratory Control Sample Duplicate (LCSD)

EPA TO-15

Run Time: VK20L11A.LCS: 12/11/2020 10:53 [VK20L11A] VK20L11A.LCSD: 12/11/2020 11:48 [VK20L11A]

Analyte	LCS	LCS Result	LCS Rec.	Rec. Limits	LCS	LCSD	LCSD	LCSD	LCSD	RPD	RPD Limits	RPD
	Spike Amount				Qualifier	Spike Amount	Result	Rec.	Qualifier	%	%	Qualifier
	µg/m3	µg/m3	%	%		µg/m3	µg/m3	%		%		
Hexachlorobutadiene	135	130	97	70-134		135	132	98		1	20	
n-Hexane	44.6	42.7	96	70-130		44.6	42.2	95		1	20	
2-Hexanone	52.2	51.6	99	70-139		52.2	52.3	100		1	20	
Isopropanol	32.0	28.9	90	54-144		32.0	28.6	90		0	20	
4-Methyl-2-pentanone	52.3	55.2	106	70-130		52.3	55.8	107		1	20	
Methylene Chloride	43.8	41.3	94	70-132		43.8	41.7	95		1	20	
2-Methylnaphthalene	73.7	78.8	107	70-146		73.7	79.4	108		1	20	
MTBE	46.7	51.0	109	70-130		46.7	51.0	109		0	20	
Naphthalene	65.2	72.1	111	70-148		65.2	73.3	112		1	20	
Styrene	54.4	53.7	99	70-130		54.4	54.5	100		1	20	
1,1,2,2-Tetrachloroethane	88.3	80.1	91	70-130		88.3	81.8	93		2	20	
Tetrachloroethene	86.7	79.2	91	70-130		86.7	80.2	93		2	20	
Tetrahydrofuran	38.3	35.3	92	70-138		38.3	36.1	94		2	20	
Toluene	48.1	43.3	90	70-130		48.1	43.9	91		1	20	
1,2,4-Trichlorobenzene	93.0	105	112	70-140		93.0	106	114		2	20	
1,1,1-Trichloroethane	69.9	77.2	111	70-130		69.9	77.7	111		0	20	
1,1,2-Trichloroethane	72.7	65.0	89	70-130		72.7	65.9	91		2	20	
Trichloroethene	68.4	70.1	103	70-130		68.4	71.3	104		1	20	
Trichlorofluoromethane	71.3	73.5	103	70-132		71.3	73.0	102		1	20	
1,1,2-Trichlorotrifluoroethane	95.2	96.4	101	70-130		95.2	95.6	100		1	20	
1,2,4-Trimethylbenzene	61.2	61.7	101	70-132		61.2	62.5	102		1	20	
1,3,5-Trimethylbenzene	62.7	62.6	100	70-131		62.7	63.6	101		1	20	
Vinyl Acetate	46.4	46.9	101	70-131		46.4	47.7	103		2	20	
Vinyl Chloride	32.0	31.7	99	70-131		32.0	32.1	100		1	20	
m&p-Xylene	110	100	91	70-130		110	101	92		1	20	
o-Xylene	55.2	53.4	97	70-130		55.2	54.0	98		1	20	
4-Bromofluorobenzene(S)			96	80-120				95				

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Definitions/ Qualifiers:

- U: The analyte was not detected at or above the Reporting Limit (RL).
- *: Value reported is outside QC limits

Exception Summary:

Exceptions have been properly noted on reported results or affected samples have been scheduled for reanalysis when appropriate.

Report Generated By:



By Sharon Rakow at 11:58 AM, Dec 17, 2020

Attachment 3

Boring Logs

Soil Boring Log

Project Name: RACER Lansing Date Started: 02/17/2020 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 02/17/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1				SB-A5.8-NM321 (1-2)_02172020 @ 14:00 and DUP-01 _02172020	0.0		(0.0-0.3') TOPSOIL.	(0.0-10.0') Backfilled with soil cuttings	
2		48	0.0		(0.3-10.0') CLAY, medium to high plasticity, no dilatancy; some silt; trace sand, very fine; trace granules, subrounded; trace pebbles, small, subrounded; moist; stiff; light yellowish brown (10YR 6/4). Note: Slightly mottled.				
3			0.0						
4			0.0						
5			0.0						
6			60	SB-A5.8-NM321 (5-6)_02172020 @ 14:05	0.0				
7					0.0				
8					0.0				
9					0.0				
10					0.0				
11						End of boring at 10.0' bgs.			
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: bgs = below ground surface. Converted to Well: Yes No
 Surface Elev.: NA
 North Coord.: 451199.6
 East Coord.: 13066718.5

SOIL BORING LOG 2013 VARCADIS-US.COM\OFFICE\DATA\NOV\MI\COM\MON\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_011521.GPJ ARCADIS 2013.GDT 1/16/21

Soil Boring Log

Project Name: RACER Lansing Date Started: 02/17/2020 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 02/17/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1				SB-A5.8-NM324 (1-2)_02172020 @ 13:40	0.0	(0.0-0.5') TOPSOIL.	(0.0-10.0') Backfilled with soil cuttings		
2		38	0.0		(0.5-6.25') SAND, very fine to fine; little to some silt; trace granules, subrounded; trace pebbles, small, subrounded; poorly sorted; moist to wet; yellowish brown (10YR 5/6). Note: Boring appeared wet at 1.5' bgs.				
3			0.0						
4			0.0						
5			0.0						
6				SB-A5.8-NM324 (5-6)_02172020 @ 13:45	0.0	(6.25-10.0') CLAY, medium to high plasticity, no dilatancy; some silt; trace sand, very fine; trace granules, subrounded; trace pebbles, small, subrounded; moist; stiff; light yellowish brown (10YR 6/4). Note: Slightly mottled.			
7		60	0.0						
8			0.0						
9			0.0						
10			0.0						
11				End of boring at 10.0' bgs.					
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Geoprobe Water Level Start (ft. bgs.): 1.5
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: bgs = below ground surface. Converted to Well: Yes No
 Surface Elev.: NA
 North Coor.: 451199.5
 East Coor.: 13066751.4

SOIL BORING LOG: 2013 VARCADIS-US.COM\OFFICE\DATA\NOV\H\MICOM\CON\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_011521.GPJ ARCADIS 2013.GDT 1/16/21

Soil Boring Log

Project Name: RACER Lansing Date Started: 02/17/2020 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 02/17/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0	(0.0-0.5') ASPHALT.		(0.0-0.5') Asphalt.	
2			42		0.0	(0.5-2.0') CLAY, low plasticity, no dilatancy; some silt; trace sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small to medium, subrounded; dry; stiff; brown (10YR 5/3).			
3					0.0	(2.0-8.5') CLAY, high plasticity, no dilatancy; little silt; moist; medium stiff; grayish brown (10YR 5/2).			
4					0.0				
5					0.0			(0.5-10.0') Backfilled with soil cuttings.	
6					0.0				
7				VAP-A5.7-MB257	0.0				
8		60		(5-10)_02172020 @ 15:00	0.0				
9					0.0	(8.5-9.0') SAND, very fine to fine, subrounded; little silt; trace granules, subrounded; trace pebbles, small, subrounded; poorly sorted; wet; yellowish brown (10YR 5/6).			
10					0.0	(9.0-10.0') CLAY, medium to high plasticity, no dilatancy; little silt; moist; stiff; grayish brown (10YR 5/2). End of boring at 10.0' bgs.			
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Geoprobe Water Level Start (ft. bgs.): 8.5
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: bgs = below ground surface. Temporary well (1.0" dia. PVC) screened from 5.0-10' bgs. Converted to Well: Yes No
 Surface Elev.: NA
 North Coord.: 451566.4
 East Coord.: 13066107.0

SOIL BORING LOG: 2013 \ARCADIS\US\COM\OFFICE\DATA\NOV\MICOM\CON\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_011521.GPJ ARCADIS 2013.GDT 1/15/21

Soil Boring Log

Project Name: RACER Lansing Date Started: 11/23/2020 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 11/23/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 40° F, Partly Cloudy/Windy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.1		(0.0-0.6') ASPHALT.	(0.0-10.0') 8.0" dia. drilled hole (0.0-3.0') Bentonite Time-Release Coated Pellets (0.0-5.0') 2.0" dia. PVC casing (3.0-10.0') Filter Pack Sand (5.0-10.0') 2.0" dia. Stainless-Steel 0.010-Slot Screen	
2				0.0		(0.6-7.0') CLAY, low to medium plasticity, no dilatancy; and SILT; little sand, very fine; trace granules, subrounded; trace pebbles, small to medium, subrounded; dry to moist; stiff; dark yellowish brown (10YR 4/4).			
3		72			0.0				
4					0.0				
5					0.0				
6					0.0				
7					0.0		(7.0-7.3') SAND, fine to medium, subrounded; trace silt; well sorted; wet; gray (10YR 6/1).	(5.0-10.0') 2.0" dia. Stainless-Steel 0.010-Slot Screen	
8		42			0.0	(7.3-9.0') CLAY, medium plasticity, no dilatancy; and SILT; little sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small to medium, subrounded; moist; stiff; grayish brown (10YR 5/2).			
9					0.0	(9.0-9.5') SAND, very fine to coarse, subrounded; trace granules, subrounded; trace silt; poorly sorted; wet; gray (10YR 6/1).			
10					0.0	(9.5-10.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine; trace granules, subrounded; trace pebbles, small to medium, subrounded; moist; stiff; grayish brown (10YR 5/2).			
11							End of boring at 10.0' bgs.		
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Cascade Sampling Method: Macrocore
 Driller: Todd Grossman Sampling Interval: Continuous
 Drilling Method: Hand Auger / Direct Push Water Level Start (ft. bgs.): 7
 Drilling Fluid: None Water Level Finish (ft. btoc.): 5.69
 Remarks: bgs = below ground surface. Converted to Well: Yes No
 Surface Elev.: NA
 North Coord.: _____
 East Coord.: _____

SOIL BORING LOG: 2013 VARCADIS-US.COM\OFFICE\DATA\ANNOV\MICOM\CON\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_113020.GPJ ARCADIS 2013.GDT 11/30/20

Soil Boring Log

Project Name: RACER Lansing Date Started: 11/23/2020 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 11/23/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 40° F, Partly Cloudy/Windy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0	(0.0-1.0') GRASS/TOPSOIL.		(0.0-10.0') 8.0" dia. drilled hole (0.0-5.0') 2.0" dia. PVC casing (0.0-4.0') Bentonite Time-Release Coated Pellets (4.0-11.0') Filter Pack Sand	
2				0.0	(1.0-7.5') CLAY, low to medium plasticity, no dilatancy; some silt; trace sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small to medium, subrounded; dry; stiff; grayish brown (10YR 5/2).				
3		72		0.0					
4				0.0					
5				0.0					
6				0.0					
7					0.0			(6.0-11.0') 2.0" dia. Stainless-Steel 0.010-Slot Screen	
8		48		0.0	(7.5-8.3') SAND, very fine to coarse, subrounded; trace to little silt; poorly sorted; wet; grayish brown (10YR 5/2).				
9				0.0	(8.3-8.6') CLAY, medium to high plasticity, no dilatancy; some silt; trace sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry to moist; medium stiff; grayish brown (10YR 5/2).				
10				0.0	(8.6-9.2') SAND, very fine to fine, subrounded; little silt; well sorted; wet; yellowish brown (10YR 5/6).				
11		12		0.0	(9.2-11.0') CLAY, medium to high plasticity, no dilatancy; some silt; trace sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small to medium, subrounded; moist; medium stiff; grayish brown (10YR 5/2).				
12						End of boring at 11.0' bgs.			
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Cascade Sampling Method: Macrocore
 Driller: Todd Grossman Sampling Interval: Continuous
 Drilling Method: Hand Auger / Direct Push Water Level Start (ft. bgs.): 7.5
 Drilling Fluid: None Water Level Finish (ft. btoc.): 5.84
 Remarks: bgs = below ground surface. Converted to Well: Yes No
 Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG: 2013 \ARCADIS\US\COM\OFFICE\DATA\ANNOV\MICOM\CON\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_113020.GPJ ARCADIS 2013.GDT 11/30/20

Soil Boring Log

Project Name: RACER Lansing Date Started: 11/24/2020 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 11/24/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 30° F, Cloudy



Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') GRASS/TOPSOIL.	(0.0-0.5') Concrete	
2					0.0		(1.0-7.5') CLAY, low to medium plasticity, no dilatancy; some silt; trace sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry; stiff; grayish brown (10YR 5/2).	(0.0-4.5') 0.25" dia. Teflon tubing (1.0-3.75') Hydrated Granular Bentonite (0.0-5.25') 4.0" dia. drilled hole (3.75-4.25') Dry Granular Bentonite (4.25-5.25') Filter Pack Sand, K&E WP #1 (4.5-5.0') 2.0" dia. Stainless-Steel Screen	
3		72			0.0				
4					0.0				
5					0.0				
6					0.0				
7				SVMP-20-01 (5-10)	0.0		(7.5-10.0') SAND, very fine to coarse, subrounded; trace to little silt; poorly sorted; wet; grayish brown (10YR 5/2).		
8		48			0.0				
9					0.0				
10					0.0		(10.0-15.0') CLAY, medium to high plasticity, no dilatancy; some silt; trace sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small to medium, subrounded; dry; stiff; grayish brown (10YR 5/2).		
11					0.0				
12					0.0				
13		60			0.0				
14					0.0				
15					0.0		Note: Increase in silt content at 14.0' bgs.		
16							End of boring at 15.0' bgs.		
17									
18									
19									
20									

SOIL BORING LOG: 2013 \ARCADIS\US\COM\OFFICE\DATA\ANALYSIS\BORING LOGS\RACER LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING\MASTER.DAT\BASE_113020.GPJ ARCADIS 2013.GDT 11/30/20

Drilling Co.: Cascade Sampling Method: Macrocore
 Driller: Todd Grossman Sampling Interval: Continuous
 Drilling Method: Hand Auger / Direct Push Water Level Start (ft. bgs.): 7.5
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: bgs = below ground surface. Temporary well screen set from 5.0-10.0' bgs. Converted to Well: Yes No
 Surface Elev.: _____
 North Coor.: _____
 East Coor.: _____

Soil Boring Log

Project Name: RACER Lansing Date Started: 01/22/2021 Logger: A. Villhauer
 Project Number: 30042872 Date Completed: 01/22/2021 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Windy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1				SB-A16-HU181R_0-1 @ 1150	NR		(0.0-1.0') CLAY, low plasticity; some sand, fine; trace pebbles, small, subangular to subrounded; moist; soft; brown (10YR 4/3).		
2			60		NR		(1.0-5.0') SAND, fine to coarse, subangular; some granules, subangular to subrounded; some pebbles, small to large, subangular to subrounded; trace clay; poorly sorted; moist; dark brown (10YR 3/3). Note: Trace glass and coal fragments present.		
3					NR		Note: Reddish staining present from 2.0-5.0' bgs.		
4				SB-A16-HU181R_4-5 @ 1200	NR				
5							End of boring at 5.0' bgs.		
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: Alex Villhauer Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Soil boring abandoned. Located 2.0' north of SB-A16-HU181/MW-13-32. Encountered refusal between 2.0-4.0' bgs during the first three drilling attempts. Converted to Well: Yes No
 Surface Elev.: _____
 North Coord.: _____
 East Coord.: _____

SOIL BORING LOG: 2013 \ARCADIS-US.COM\OFFICE\DATA\NOV\MI\COMMON\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_012721.GPJ ARCADIS_2013.GDT 1/27/21

Soil Boring Log

Project Name: RACER Lansing Date Started: 07/21/2020 Logger: K. Donahue
 Project Number: 30042872 Date Completed: 07/21/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy



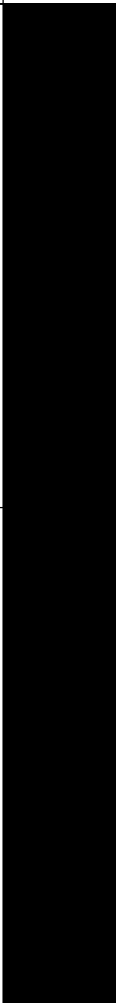




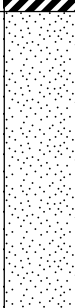

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') SAND, very fine to very coarse; and GRAVEL; some pebbles, small to very large, subrounded; poorly sorted; moist; dark yellowish brown (10YR 3/6).	(0.0-15.0') Backfilled with bentonite.	
2			60		0.0		(1.0-2.5') SAND, very fine to very coarse; and GRAVEL; some pebbles, small to large, subrounded to subangular; poorly sorted; moist; very dark brown (10YR 2/2).		
3					0.0		(2.5-3.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; soft; moist to wet; dark grayish brown (10YR 4/2).		
4					0.0		(3.0-5.0') CLAY, medium to high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist; gray (10YR 6/1) and brownish yellow (10YR 6/6).		
5					0.0		(5.0-9.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff to soft; moist to wet; gray (10YR 6/1).		
6					0.0		(9.0-10.0') SAND, very fine to medium; and CLAY, high plasticity, no dilatancy; little silt; trace sand, very coarse, subrounded to subangular; trace granules, subrounded to subangular; well sorted; medium stiff; moist; dark yellowish brown (10YR4/6) and gray (10YR 6/1).		
7			53		0.0		(10.0-13.0') SAND, very fine to fine; little silt; little sand, medium to coarse, subrounded to subangular; trace clay; well sorted; wet; brown (10YR 5/3).		
8				VAP-OS-LV263_8-13 @ 12:42 on 7/21/2020	0.0		(13.0-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist to wet; dark gray (10YR 4/1).		
9					0.0		(13.0-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist to wet; dark gray (10YR 4/1).		
10			48		0.0		(13.0-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist to wet; dark gray (10YR 4/1).		
11					0.0		(13.0-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist to wet; dark gray (10YR 4/1).		
12					0.0		(13.0-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist to wet; dark gray (10YR 4/1).		
13					0.0		(13.0-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist to wet; dark gray (10YR 4/1).		
14					0.0		(13.0-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist to wet; dark gray (10YR 4/1).		
15					0.0		(13.0-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist to wet; dark gray (10YR 4/1).		
16							End of boring at 15.0' bgs.		
17									
18									
19									
20									

Drilling Co.: Stock Drilling Sampling Method: Dual Tube
 Driller: Jesse Stromberger Sampling Interval: Continuous
 Drilling Method: Hand Auger / Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Temporary well screen set from 8.0-13.0' bgs. Converted to Well: Yes No
Located in roadway. Pavement ~5" thick. Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG - 2013 VARCADIS-US.COM\OFFICE\DATA\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_081520.GPJ ARCADIS 2013.GDT 9/15/20

Soil Boring Log

Project Name: RACER Lansing Date Started: 07/21/2020 Logger: K. Donahue
 Project Number: 30042872 Date Completed: 07/21/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			60		0.0		(0.0-2.0') SAND, very fine to very coarse; and GRAVEL; some pebbles, small to medium, rounded to subangular; poorly sorted; moist; dark yellowish brown (10YR 3/4).		
2					0.0				
3					0.0		(2.0-3.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to medium; soft; moist; very dark gray (10YR 3/1) and gray (10YR 5/1).		
4					0.0				
5					0.0				
6			48		0.0		(3.0-8.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; medium stiff; moist; gray (10YR 6/1) and brownish yellow (10YR 6/6).	(0.0-15.0') Backfilled with bentonite.	
7					0.0				
8					0.0				
9					0.0				
10					0.0				
11			42	VAP-OS-LY263_9-14 and DUP-01 @ 13:03 on 7/21/2020	0.0		(8.0-10.0') CLAY, high plasticity, no dilatancy; some sand, very fine to fine; little silt; trace sand, very coarse, subrounded to subangular; very soft; wet; gray (10YR 5/1).		
12					0.0				
13					0.0				
14					0.0				
15					0.0				
16							(10.0-14.5') SAND, very fine to fine; some clay, high plasticity, no dilatancy; little silt; well sorted; wet; grayish brown (10YR 5/2).		
17							(14.5-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; soft; moist to wet; dark grayish brown (10YR 4/2). End of boring at 15.0' bgs.		
18									
19									
20									

SOIL BORING LOG - 2013 VARCADIS-US.COM\OFFICE\DATA\ANALYSIS\BORING LOGS\RACER LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING\MASTER.DAT\BASE_091520.GPJ ARCADIS 2013.GDT 9/15/20

Drilling Co.: Stock Drilling Sampling Method: Dual Tube
 Driller: Jesse Stromberger Sampling Interval: Continuous
 Drilling Method: Hand Auger / Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Temporary well screen set from 9.0-14.0' bgs. Converted to Well: Yes No
Located in roadway. Pavement ~5" thick. Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

Soil Boring Log

Project Name: RACER Lansing Date Started: 07/24/2020 Logger: K. Donahue
 Project Number: 30042872 Date Completed: 07/24/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 70° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.5') TOPSOIL.		
2			60		0.0		(1.5-8.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; stiff; dry to moist; gray (10YR 6/1) and yellowish brown (10YR 5/6). Note: Clay crumbles easily.		
3					0.0				
4					0.0				
5					0.0				
6					0.0				
7			56		0.0		Note: Moisture content changes to moist at 7.0' bgs.	(0.0-15.0') Backfilled with bentonite.	
8					0.0				
9				VAP-OS-MA266_7-12 @ 11:53 on 7/24/2020	0.0		(8.0-9.0') CLAY, high plasticity, no dilatancy; some sand, very fine to fine; little silt; trace sand, coarse to very coarse, subrounded to subangular; trace granules, subrounded to subangular; soft; moist to wet; grayish brown (10YR 5/2).		
10					0.0		(9.0-10.5') SAND, very fine to medium; some silt; little sand, coarse to very coarse, subrounded to subangular; little pebbles, small to medium, subrounded to subangular; trace clay; poorly sorted; wet; yellowish brown (10YR 5/4).		
11					NR		(10.5-13.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; trace sand, very coarse, rounded to subangular; trace granules, rounded to subangular; soft; moist to wet; gray (10YR 5/1).		
12					NR				
13			53		NR				
14					NR		(13.0-14.0') CLAY, high plasticity, no dilatancy; some silt; little sand, very fine to fine; trace granules, subrounded to subangular; soft; moist to wet; gray (10YR 5/1).		
15					NR		(14.0-15.0') SILT, nonplastic, rapid dilatancy; some sand, very fine to fine; little clay; trace granules, subrounded to subangular; trace pebbles, small to medium, subrounded to subangular; wet; gray (10YR 5/1). End of boring at 15.0' bgs.		
16									
17									
18									
19									
20									

Drilling Co.: Stock Drilling Sampling Method: Dual Tube
 Driller: Jesse Stromberger Sampling Interval: Continuous
 Drilling Method: Hand Auger / Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Temporary well screen set from 7.0-12.0' bgs. Converted to Well: Yes No
 Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG - 2013 V:\ARCADIS\US\COM\OFFICE\DATA\NOV\H\MICCOM\CON\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_081520.GPJ ARCADIS 2013.GDT 9/15/20

Soil Boring Log

Project Name: RACER Lansing Date Started: 07/21/2020 Logger: K. Donahue
 Project Number: 30042872 Date Completed: 07/21/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 72° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-0.4') ASPHALT.		
2			60		0.0		(0.4-2.5') SAND, very fine to medium; trace silt; trace gravel; trace granules; trace pebbles, small to large, subrounded to subangular; poorly sorted; moist; dark yellowish brown (10YR 4/4).		
3					0.0		(2.5-7.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; soft; moist; gray (10YR 5/1) and brownish yellow (10YR 6/6).		
4					0.0				
5					0.0				
6					0.0				
7				VAP-OS-MB263_5-10	0.0				
8			54	and MS/MSD @ 13:37 on 7/21/2020	0.0		(7.0-8.0') SAND, very fine to fine; some silt; trace granules, subrounded to subangular; trace clay; well sorted; wet; yellowish brown (10YR 5/4).		
9					0.0		(8.0-14.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; trace pebbles, very large, subrounded to subangular; soft; moist to wet; dark gray (10YR 4/1).		
10					0.0			(0.0-20.0') Backfilled with bentonite.	
11					0.0				
12					0.0				
13			52		0.0				
14					0.0				
15					0.0		(14.0-17.0') SILT, nonplastic, rapid dilatancy; little sand, very fine to fine; trace clay; wet; gray (10YR 5/1).		
16					0.0				
17					0.0				
18			43		0.0		(17.0-20.0') CLAY, medium to high plasticity, no dilatancy; some silt; little sand, very fine to fine; soft; wet; gray (10YR 5/1).		
19					0.0				
20					0.0		End of boring at 20.0' bgs.		

Drilling Co.: Stock Drilling Sampling Method: Dual Tube
 Driller: Jesse Stromberger Sampling Interval: Continuous
 Drilling Method: Hand Auger / Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Temporary well screen set from 5.0-10.0' bgs. Converted to Well: Yes No
 Surface Elev.: NA
 North Coord.: _____
 East Coord.: _____

SOIL BORING LOG - 2013 VARCADIS-US.COM\OFFICE\DATA\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_091520.GPJ ARCADIS - 2013.GDT 9/15/20

Soil Boring Log

Project Name: RACER Lansing Date Started: 07/24/2020 Logger: K. Donahue
 Project Number: 30042872 Date Completed: 07/24/2020 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 75° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') TOPSOIL.	(0.0-15.0') Backfilled with bentonite.	
2			60		0.0		(1.0-6.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; stiff; dry to moist; gray (10YR 6/1) and yellowish brown (10YR 5/6). Note: Clay crumbles easily.		
3					0.0				
4					0.0				
5					0.0				
6					0.0		Note: Boring appears wet at 5.5' bgs.		
7			50		0.0		(6.0-6.5') SAND, very fine to fine; some silt; trace clay; trace sand, coarse to very coarse, subrounded to subangular; well sorted; wet; brown (10YR 5/3).		
8					0.0		(6.5-7.0') CLAY, high plasticity, no dilatancy; little sand, very fine to fine; little silt; trace sand, very coarse, subrounded to subangular; trace granules, subrounded to subangular; soft; wet; gray (10YR 5/1).		
9					0.0		(7.0-7.2') SAND, very fine to medium; some sand, coarse to very coarse, subrounded to subangular; some pebbles, small to large, subrounded to subangular; little silt; poorly sorted; wet; brown (10YR 5/3).		
10					0.0		(7.2-14.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine to fine; trace sand, very coarse, subrounded to subangular; trace pebbles, small to large, subrounded to subangular; medium stiff; moist to wet; dark gray (10YR 4/1).		
11				VAP-OS-MC268_8-13 @ 13:15 on 7/24/2020	0.0				
12					0.0				
13			52		0.0				
14					0.0				
15					0.0		(14.0-14.3') SAND, very fine to medium; some sand, coarse, subrounded to subangular; some pebbles, small, subrounded to subangular; little silt; poorly sorted; wet; grayish brown (10YR 5/2).		
16							(14.3-15.0') CLAY, nonplastic to medium plasticity, slow to rapid dilatancy; and SILT; some sand, very fine to fine; trace granules, subrounded to subangular; medium stiff; wet; gray (10YR 5/1). End of boring at 15.0' bgs.		
17									
18									
19									
20									

Drilling Co.: Stock Drilling Sampling Method: Dual Tube
 Driller: Jesse Stromberger Sampling Interval: Continuous
 Drilling Method: Hand Auger / Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: _____ Converted to Well: Yes No
 Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG: 2013 \VARCADIS-US.COM\OFFICE\DATA\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_091520.GPJ ARCADIS_2013.GDT 9/15/20