Ms. Christine Matlock
Senior Environmental Engineer
Hazardous Waste Section
Waste Management & Radiological Protection Division
Michigan Department of Environment, Great Lakes and Energy
525 West Allegan Street
Constitution Hall, Atrium North
Lansing, MI 48909

Arcadis of Michigan, LLC
28550 Cabot Drive
Suite 500
Novi
Michigan 48377
Phone: 248 994 2240
Fax:
www.arcadis.com

Date: April 13, 2021
Our Ref: 30075941

Subject: Plant 2 Vault Scope of Work, RACER Trust Lansing Industrial Land
Plants 2 & 3 MID 980 700 827
Lansing, Michigan

Dear Ms. Matlock,

Arcadis of Michigan, LLC (Arcadis) has prepared this Plant 2 Vault Scope of Work on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust to clean out and abandon an existing concrete vault at RACER Trust Lansing Industrial Land Plant 2, located at 2800 West Saginaw Street, in Lansing, Michigan (**Figures 1 and 2**), referred to herein as the Site. The following provides a summary of the proposed removal of the light non-aqueous phase liquid (LNAPL)/groundwater from the underground concrete vault at Plant 2, cleaning process and abandonment procedure for the subsurface structure.

Concrete Vault in Area 5-2 at Plant 2

During previous investigations in Area 5-2, a concrete vault was discovered approximately 20-feet south of monitoring well P2-SB-37/MW-37 (**Figure 2**). The concrete vault measures approximately 25-feet long (east to west), 4-feet wide, and 4-feet deep.

During initial investigations, a 10-inch diameter hole was cored through the top of the vault to inspect the contents. The concrete slab covering the vault area was determined to be 10 inches thick. Liquid was observed within the vault and was characterized through laboratory analysis. Based on historical laboratory analysis the liquid was determined to be non-hazardous, non-TSCA regulated wastewater. LNAPL was observed within the vault but not at accumulations sufficient for sample collection at that time. Additional sampling was completed on September 21, 2020 for both phases of liquid (water and LNAPL) within the vault for current waste characterization. During sampling, depth to water was encountered at 1.85 feet and depth to LNAPL was encountered at 1.9 feet; therefore, the thickness of LNAPL is approximately 0.05 feet. There is an estimated 30 gallons of LNAPL and 1,500 gallons of water in the vault. Waste characterization included analysis for volatile organic compounds (VOCs), toxicity characteristic leaching procedure (TCLP), semi-volatile organic compounds (SVOCs), TCLP Metals, pH, flashpoint, polychlorinated biphenyls (PCBs) and per- and polyfluoroalkyl substances (PFAS).

Based on waste characterization analytical results, PCBs were detected within the LNAPL phase at 5 parts per million (ppm). PCBs were detected in the water phase from the vault at a level of 0.4 micrograms per liter (µg/L). Based on the concentrations of PCBs detected and since the PCB source is unknown, the material from within the vault can be disposed of as non-hazardous.

Several other constituents were also detected within the LNAPL and water phase samples. Refer to **Attachment 1** for the waste characterization analysis. These waste characterization data have been submitted to US Ecology who has approved acceptance of the liquids.

Site Preparation

Prior to beginning liquid removal activities, the following site preparation activities will be performed.

- Proper utility clearance procedures (identification of storm sewers and location and extent of concrete vault) will be completed both within the extent of the planned work area and in the surrounding areas to locate and clear the area where the vault will be opened for access to its interior.
- Work zones and staging areas will be designated. This includes locations for equipment and vehicle storage, and contingency frac tank staging, if additional liquid containment is needed, other than vacuum trucks.
- Construction safety fence or appropriate barricades will be installed just outside the work zone boundaries.

Designated impacted liquid loading areas will be established, and appropriate measures will be taken to ensure that contact does not occur between impacted liquids designated for disposal and approved non-impacted surface cover (vegetated soil or concrete). It is anticipated that liquid removed from the vault will be directly loaded into vacuum trucks.

Impacted LNAPL/Water Removal, Transportation and Disposal

It is anticipated that no more than four openings will be completed in the top of the subsurface concrete structure in Area 5-2 (See **Figure 2**) along its length to access the interior of the structure. The access points are anticipated to be at least 1 foot by 1 foot in size and will be cut with wet method concrete saw. LNAPL and water is anticipated to be removed from the concrete vault directly into a vacuum truck and then transported to US Ecology , who has approved acceptance of this waste and is a licenced treatment/disposal facility.

Pressure Cleaning and Sampling

The interior of the concrete vault will be pressure cleaned following initial removal of liquid from inside the vault using the four openings cut in the concrete cover for access. Once pressure washing is completed and additional wash liquids pumped out, the concrete vault will be filled with a flowable fill as described in the following section. As PCB concentrations in the wash water would be comparable to the low PCB concentration detected in the water from the vault, additional sampling is not proposed and the wash water will be manged like the water contained in the vault.

Backfill and Restoration of Vault

The concrete vault will be completely backfilled with flowable fill material up to the current ground surface grade. The flowable fill material will be utilized for its ease to flow and fill in the entire vault area. The flowable fill material will also harden like concrete and will provide an adequate seal to the openings in the top of the vault used for access.

Schedule

The proposed activities will be scheduled upon receipt of EGLE's approval of the Scope of Work and are anticipated to take 2 days to complete after contractor mobilization to the Site.

Sincerely,
Arcadis of Michigan, LLC

Tiffany A. Linder
Certified Project Manager

Email: tiffany.linder@arcadis.com
Direct Line: 810-225-1928

CC. Mr. Dave Favero – RACER Trust

Enclosures:

Figures

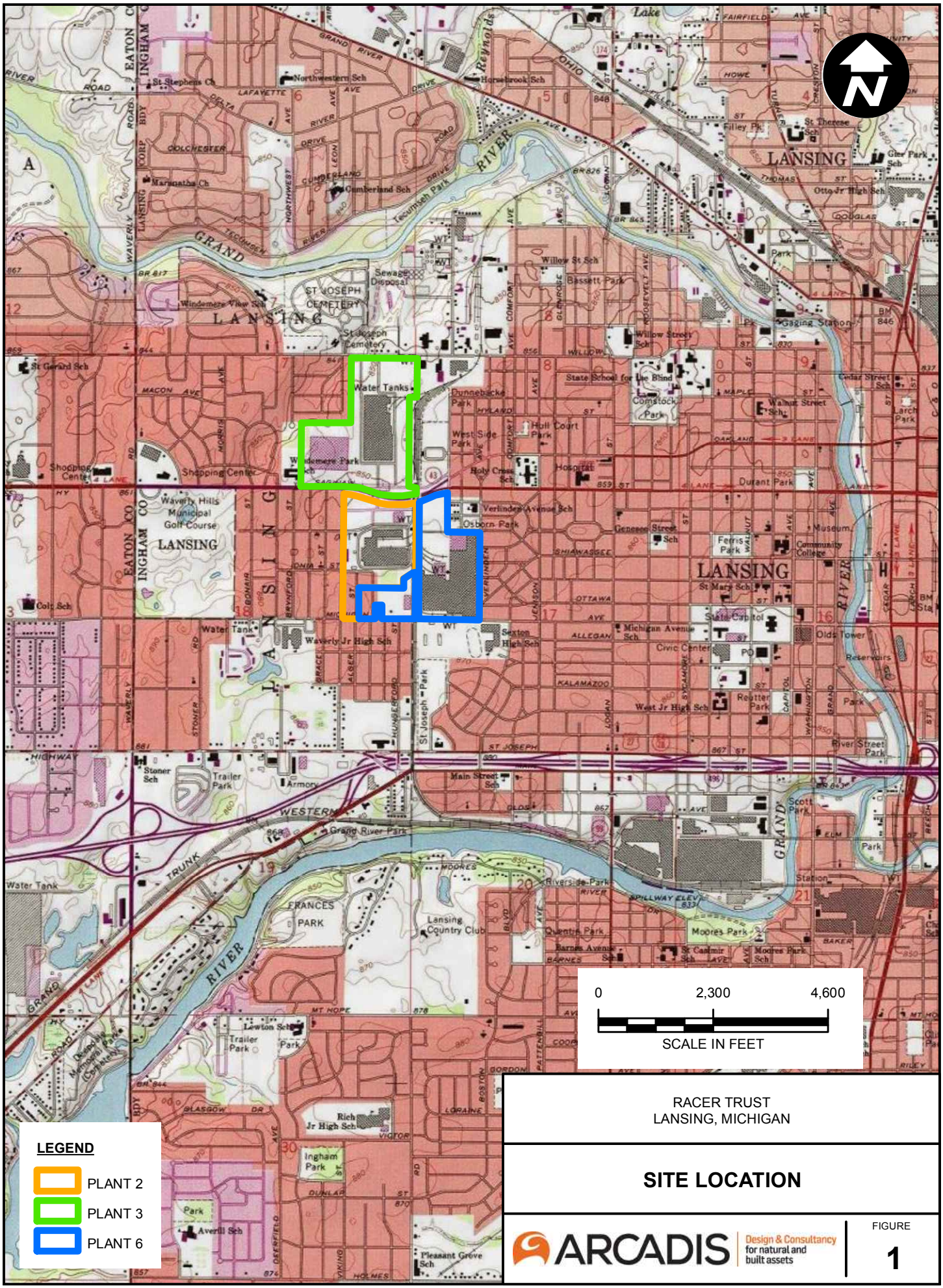
Figure 1 Site Location

Figure 2 Plant 2 Vault Location

Attachments

Attachment 1 Analytical Reports for Vault Water and LNAPL

Figures



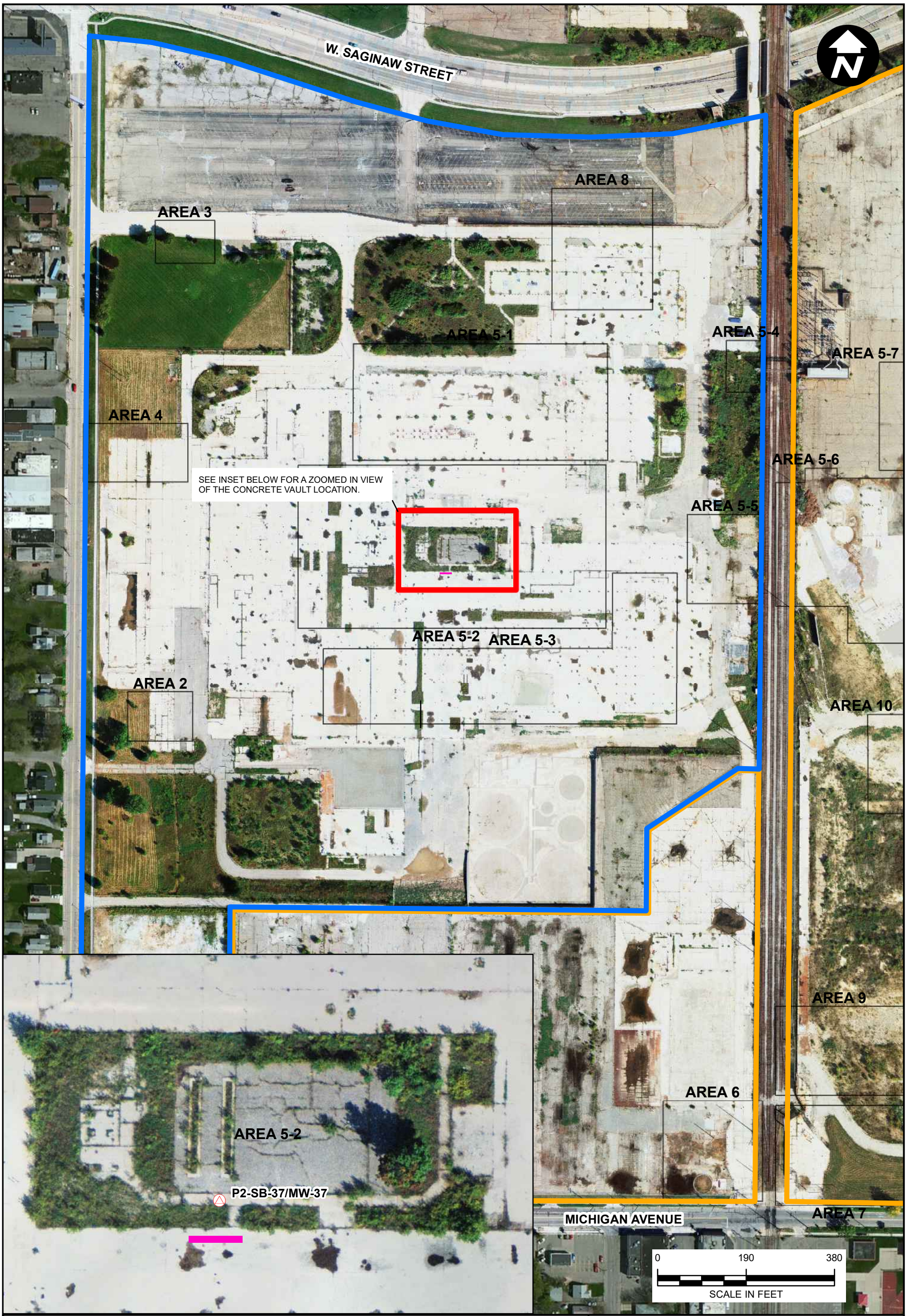
RACER TRUST
LANSING, MICHIGAN

SITE LOCATION

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
G:\GIS\Project Files\MotorsLiquidationCompany\Lansing\Docs\Phase 2 RFI Report Figs\FIG 1 - SITE LOCATION.mxd PLOTTED: 5/20/2016 10:51:21 AM BY: dolexa



LEGEND

- LNAPL MONITORING WELL
- CONCRETE VAULT
- PLANT 2
- PLANT 6

RACER TRUST
PLANT 2
LANSING, MICHIGAN

PLANT 2 VAULT LOCATION

ARCADIS

FIGURE
2

CITY: Novi DIV: ENV DB: TRY PIC: Jeff Barrett PM: Randy Christensen TM: Tiffany Linder TR: PROJECT NUMBER: 30075941 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:_ENV\RACER\Buffalo\MXDs\2020 P2 P3 Corrective Measures Workplan\Plant2_ValutLocation.mxd PLOTTED: 4/13/2021 12:06:22 PM BY: MJoye

Attachment 1

Analytical Reports for Vault Water and LNAPL

Analytical Laboratory Report

Report ID: S17615.01(01)
Generated on 10/05/2020

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

Addtional Contacts: Alex Villhauer, Marina Samp, Kaitlyn Voet

Report produced by

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

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

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S17615.01-S17615.02
Project: RACER Lansing
Collected Date(s): 09/21/2020
Submitted Date/Time: 09/21/2020 16:15
Sampled by: M. Samp / E. Feenstra
P.O. #: 30042872.00102

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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

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

Method Summary

Method	Version
ASTMD3278 - 96	ASTM Method D3278 - 96(2011)
E608.3	EPA Method 608.3 December 2016
N/A	Not Applicable
SW1311	SW 846 Method 1311 Revision 0 July 1992
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW3535A	SW 846 Method 3535A Revision 1 February 2007
SW3546	SW 846 Method 3546 Revision 0 February 2007
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW5035A/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5035A Revision 1 July 2002
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW7471B	SW 846 Method 7471B Revision 2 February 2007
SW8082A	SW 846 Method 8082A Revision 1 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007
SW9045D	SW 846 Method 9045D Revision 4 November 2004

Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S17615.01	Plant 2 Vault_NAPL	Oil	09/21/20 12:00
S17615.02	Plant 2 Vault_Water	Liquid	09/21/20 12:00

Analytical Laboratory Report

Lab Sample ID: S17615.01
Sample Tag: Plant 2 Vault_NAPL
Collected Date/Time: 09/21/2020 12:00
Matrix: Oil
COC Reference: 127173

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	32oz Glass	None	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion*	Completed	SW3015A	09/25/20 10:10	CCM	
TCLP/SPLP BNA Extraction*	Completed	SW3535A	09/22/20 16:00	JL	
Extraction, PCB*	Completed	SW3546	09/22/20 10:15	JL	
Mercury Digestion*	Completed	SW7471B	09/25/20 11:45	JRH	

TCLP Extraction

Parameter	Result	Method	Run Date	Analyst	Flags
Inital Sample pH*	6.84	SW1311	09/23/20 16:00 - 09/24/20	BML	
pH after 3.5 ml HCl*	1.83	SW1311	09/23/20 16:00 - 09/24/20	BML	
% Solids*	100	SW1311	09/23/20 16:00 - 09/24/20	BML	
Sample Used g*	40	SW1311	09/23/20 16:00 - 09/24/20	BML	
Final Volume mL*	800	SW1311	09/23/20 16:00 - 09/24/20	BML	
TCLP Extraction Fluid*	1	SW1311	09/23/20 16:00 - 09/24/20	BML	
Final Extract pH*	5.87	SW1311	09/23/20 16:00 - 09/24/20	BML	

Inorganics

Method: ASTMD3278 - 96, Run Date: 09/22/20 19:30, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Flash Point*	Not detected	180		oF	1			<140

Method: SW9045D, Run Date: 09/29/20 11:49, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
pH/ Corrosivity*	6.36	0.01		STD Units	1			2-12.5

Metals

Method: SW6020A, Run Date: 09/25/20 12:54, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Arsenic, TCLP*	Not detected	0.02		mg/L	25	7440-38-2		5.0
Barium, TCLP*	0.56	0.05		mg/L	25	7440-39-3		100.0
Cadmium, TCLP*	Not detected	0.005		mg/L	25	7440-43-9		1.0
Chromium, TCLP*	Not detected	0.05		mg/L	25	7440-47-3		5.0
Lead, TCLP*	Not detected	0.03		mg/L	25	7439-92-1		5.0
Selenium, TCLP*	Not detected	0.05		mg/L	25	7782-49-2		1.0
Silver, TCLP*	Not detected	0.005		mg/L	25	7440-22-4		5.0

Method: SW7471B, Run Date: 09/25/20 14:32, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Mercury, TCLP*	Not detected	0.0005		mg/L	5	7439-97-6		0.2

Lab Sample ID: S17615.01 (continued)
Sample Tag: Plant 2 Vault_NAPL

Organics - PCBs/Pesticides

PCB List, Method: SW8082A, Run Date: 09/22/20 16:16, Analyst: JANB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
PCB-1016*	Not detected	1,000		ug/kg	3	12674-11-2		
PCB-1242*	Not detected	1,000		ug/kg	3	53469-21-9		
PCB-1221*	Not detected	1,000		ug/kg	3	11104-28-2		
PCB-1232*	Not detected	1,000		ug/kg	3	11141-16-5		
PCB-1248*	Not detected	1,000		ug/kg	3	12672-29-6		
PCB-1254*	5,000	1,000		ug/kg	3	11097-69-1		
PCB-1260*	Not detected	1,000		ug/kg	3	11096-82-5		

Organics - Semi-Volatiles

TCLP Semi Volatiles, Method: SW8270D, Run Date: 09/24/20 19:56, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
2-Methylphenol (o-Cresol)*	Not detected	100,000		ug/L	50	95-48-7	X	200,000
3-, 4-Methylphenol (p,m-Cresol)*	Not detected	200,000		ug/L	50	3/4-CRESOL	X	200,000
Pentachlorophenol*	Not detected	100,000		ug/L	50	87-86-5	X	100,000
2,4,5-Trichlorophenol*	Not detected	100,000		ug/L	50	95-95-4	X	400,000
2,4,6-Trichlorophenol*	Not detected	100,000		ug/L	50	88-06-2	X	2,000
2,4-Dinitrotoluene*	Not detected	100,000		ug/L	50	121-14-2	X	130
Hexachlorobenzene*	Not detected	100,000		ug/L	50	118-74-1	X	130
Hexachlorobutadiene*	Not detected	100,000		ug/L	50	87-68-3	X	500
Hexachloroethane*	Not detected	100,000		ug/L	50	67-72-1	X	3,000
Nitrobenzene*	Not detected	100,000		ug/L	50	98-95-3	X	2,000
Pyridine*	Not detected	100,000		ug/L	50	110-86-1	X	5,000

Organics - Volatiles

Volatile Organics, Method: SW5035A/8260C, Run Date: 10/05/20 15:33, Analyst: JML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Diethyl ether*	Not detected	500		ug/kg	500	60-29-7	Y	
Acetone*	Not detected	5,000		ug/kg	500	67-64-1	Y	
Methyl iodide*	Not detected	500		ug/kg	500	74-88-4	Y	
Carbon disulfide*	Not detected	500		ug/kg	500	75-15-0	Y	
tert-Methyl butyl ether (MTBE)*	Not detected	500		ug/kg	500	1634-04-4	Y	
Acrylonitrile*	Not detected	500		ug/kg	500	107-13-1	Y	
2-Butanone (MEK)*	Not detected	5,000		ug/kg	500	78-93-3	Y	
Dichlorodifluoromethane*	Not detected	500		ug/kg	500	75-71-8	Y	
Chloromethane*	Not detected	500		ug/kg	500	74-87-3	Y	
Vinyl chloride*	Not detected	500		ug/kg	500	75-01-4	Y	
Bromomethane*	Not detected	500		ug/kg	500	74-83-9	Y	
Chloroethane*	Not detected	500		ug/kg	500	75-00-3	Y	
Trichlorofluoromethane*	Not detected	500		ug/kg	500	75-69-4	Y	
1,1-Dichloroethene*	Not detected	500		ug/kg	500	75-35-4	Y	
Methylene chloride*	Not detected	1,000		ug/kg	500	75-09-2	Y	
trans-1,2-Dichloroethene*	Not detected	500		ug/kg	500	156-60-5	Y	
1,1-Dichloroethane*	2,000	500		ug/kg	500	75-34-3	Y	
cis-1,2-Dichloroethene*	Not detected	500		ug/kg	500	156-59-2	Y	
Tetrahydrofuran*	Not detected	10,000		ug/kg	500	109-99-9	Y	
Chloroform*	Not detected	500		ug/kg	500	67-66-3	Y	
Bromochloromethane*	Not detected	500		ug/kg	500	74-97-5	Y	

X-Elevated reporting limit due to matrix interference
Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S17615.01 (continued)
Sample Tag: Plant 2 Vault_NAPL

Volatile Organics, Method: SW5035A/8260C, Run Date: 10/05/20 15:33, Analyst: JML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
1,1,1-Trichloroethane*	Not detected	500		ug/kg	500	71-55-6	Y	
4-Methyl-2-pentanone (MIBK)*	Not detected	5,000		ug/kg	500	108-10-1	Y	
2-Hexanone*	Not detected	5,000		ug/kg	500	591-78-6	Y	
Carbon tetrachloride*	Not detected	500		ug/kg	500	56-23-5	Y	
Benzene*	Not detected	500		ug/kg	500	71-43-2	Y	
1,2-Dichloroethane*	Not detected	500		ug/kg	500	107-06-2	Y	
Trichloroethene*	Not detected	500		ug/kg	500	79-01-6	Y	
1,2-Dichloropropane*	Not detected	500		ug/kg	500	78-87-5	Y	
Bromodichloromethane*	Not detected	500		ug/kg	500	75-27-4	Y	
Dibromomethane*	Not detected	500		ug/kg	500	74-95-3	Y	
cis-1,3-Dichloropropene*	Not detected	500		ug/kg	500	10061-01-5	Y	
Toluene*	Not detected	500		ug/kg	500	108-88-3	Y	
trans-1,3-Dichloropropene*	Not detected	500		ug/kg	500	10061-02-6	Y	
1,1,2-Trichloroethane*	Not detected	500		ug/kg	500	79-00-5	Y	
Tetrachloroethene*	Not detected	500		ug/kg	500	127-18-4	Y	
trans-1,4-Dichloro-2-butene*	Not detected	500		ug/kg	500	110-57-6	Y	
Dibromochloromethane*	Not detected	500		ug/kg	500	124-48-1	Y	
1,2-Dibromoethane*	Not detected	500		ug/kg	500	106-93-4	Y	
Chlorobenzene*	Not detected	500		ug/kg	500	108-90-7	Y	
1,1,1,2-Tetrachloroethane*	Not detected	500		ug/kg	500	630-20-6	Y	
Ethylbenzene*	1,100	500		ug/kg	500	100-41-4	Y	
p,m-Xylene*	3,000	1,000		ug/kg	500		Y	
o-Xylene*	900	500		ug/kg	500	95-47-6	Y	
Styrene*	2,200	500		ug/kg	500	100-42-5	Y	
Isopropylbenzene*	Not detected	500		ug/kg	500	98-82-8	Y	
Bromoform*	Not detected	500		ug/kg	500	75-25-2	Y	
1,1,2,2-Tetrachloroethane*	Not detected	500		ug/kg	500	79-34-5	Y	
1,2,3-Trichloropropane*	Not detected	500		ug/kg	500	96-18-4	Y	
n-Propylbenzene*	Not detected	500		ug/kg	500	103-65-1	Y	
Bromobenzene*	Not detected	500		ug/kg	500	108-86-1	Y	
1,3,5-Trimethylbenzene*	Not detected	500		ug/kg	500	108-67-8	Y	
tert-Butylbenzene*	Not detected	500		ug/kg	500	98-06-6	Y	
1,2,4-Trimethylbenzene*	Not detected	500		ug/kg	500	95-63-6	Y	
sec-Butylbenzene*	Not detected	500		ug/kg	500	135-98-8	Y	
p-Isopropyltoluene*	Not detected	500		ug/kg	500	99-87-6	Y	
1,3-Dichlorobenzene*	Not detected	500		ug/kg	500	541-73-1	Y	
1,4-Dichlorobenzene*	Not detected	500		ug/kg	500	106-46-7	Y	
1,2-Dichlorobenzene*	Not detected	500		ug/kg	500	95-50-1	Y	
1,2,3-Trimethylbenzene*	Not detected	500		ug/kg	500	526-73-8	Y	
n-Butylbenzene*	Not detected	500		ug/kg	500	104-51-8	Y	
Hexachloroethane*	Not detected	500		ug/kg	500	67-72-1	Y	
1,2-Dibromo-3-chloropropane*	Not detected	500		ug/kg	500	96-12-8	Y	
1,2,4-Trichlorobenzene*	Not detected	500		ug/kg	500	120-82-1	Y	
1,2,3-Trichlorobenzene*	Not detected	500		ug/kg	500	87-61-6	Y	
Naphthalene*	Not detected	1,000		ug/kg	500	91-20-3	Y	
2-Methylnaphthalene*	Not detected	1,000		ug/kg	500	91-57-6	Y	

Y-Elevated reporting limit due to high target concentration

Lab Sample ID: S17615.02
Sample Tag: Plant 2 Vault_Water
Collected Date/Time: 09/21/2020 12:00
Matrix: Liquid
COC Reference: 127173

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
2	32oz Glass	None	Yes	4.9	IR
1	1L Amber	None	Yes	4.9	IR
3	40ml Glass	HCL	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	09/24/20 11:30	JML	
Metal Digestion	Completed	SW3015A	09/25/20 10:10	CCM	
Extraction, PCB*	Completed	E608.3	09/24/20 14:00	CM	
TCLP/SPLP BNA Extraction*	Completed	SW3535A	09/22/20 16:00	JL	
Mercury Digestion*	Completed	SW7471B	09/25/20 11:45	JRH	

TCLP Extraction

Parameter	Result	Method	Run Date	Analyst	Flags
Inital Sample pH	<0.5%	SW1311	09/24/20 08:45 - 09/24/20	BML	
pH after 3.5 ml HCl	<0.5%	SW1311	09/24/20 08:45 - 09/24/20	BML	
% Solids	<0.5%	SW1311	09/24/20 08:45 - 09/24/20	BML	
Sample Used g	<0.5%	SW1311	09/24/20 08:45 - 09/24/20	BML	
Final Volume mL	<0.5%	SW1311	09/24/20 08:45 - 09/24/20	BML	
TCLP Extraction Fluid	<0.5%	SW1311	09/24/20 08:45 - 09/24/20	BML	
Final Extract pH	<0.5%	SW1311	09/24/20 08:45 - 09/24/20	BML	

Inorganics

Method: ASTMD3278 - 96, Run Date: 09/22/20 19:30, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Flash Point*	Not detected	180		oF	1			<140

Method: SW9045D, Run Date: 09/24/20 15:16, Analyst: NAW

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
pH/ Corrosivity*	7.39	0.01		STD Units	1			2-12.5

Metals

Method: SW6020A, Run Date: 09/25/20 12:57, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Arsenic, TCLP	Not detected	0.02		mg/L	25	7440-38-2		5.0
Barium, TCLP	Not detected	0.05		mg/L	25	7440-39-3		100.0
Cadmium, TCLP	Not detected	0.005		mg/L	25	7440-43-9		1.0
Chromium, TCLP	Not detected	0.05		mg/L	25	7440-47-3		5.0
Lead, TCLP	Not detected	0.03		mg/L	25	7439-92-1		5.0
Selenium, TCLP	Not detected	0.05		mg/L	25	7782-49-2		1.0
Silver, TCLP	Not detected	0.005		mg/L	25	7440-22-4		5.0

Method: SW7471B, Run Date: 09/25/20 14:34, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Mercury, TCLP*	Not detected	0.0005		mg/L	5	7439-97-6		0.2

Lab Sample ID: S17615.02 (continued)
Sample Tag: Plant 2 Vault_Water

Organics - PCBs/Pesticides

PCB, Method: E608.3, Run Date: 09/28/20 18:41, Analyst: JANB

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
PCB-1016	Not detected	0.1		ug/L	1	12674-11-2		
PCB-1221	Not detected	0.1		ug/L	1	11104-28-2		
PCB-1232	Not detected	0.1		ug/L	1	11141-16-5		
PCB-1242	Not detected	0.1		ug/L	1	53469-21-9		
PCB-1248	Not detected	0.1		ug/L	1	12672-29-6		
PCB-1254	0.4	0.1		ug/L	1	11097-69-1		
PCB-1260	Not detected	0.1		ug/L	1	11096-82-5		
PCB, Total*	0.4	0.1		ug/L	1	1336-36-3		

Organics - Semi-Volatiles

TCLP Semi Volatiles, Method: SW8270D, Run Date: 09/24/20 20:19, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
2-Methylphenol (o-Cresol)	Not detected	1,000		ug/L	30	95-48-7		200,000
3-, 4-Methylphenol (p,m-Cresol)	Not detected	1,000		ug/L	30	3/4-CRESOL		200,000
Pentachlorophenol	Not detected	1,000		ug/L	30	87-86-5		100,000
2,4,5-Trichlorophenol	Not detected	1,000		ug/L	30	95-95-4		400,000
2,4,6-Trichlorophenol	Not detected	1,000		ug/L	30	88-06-2		2,000
2,4-Dinitrotoluene	Not detected	90		ug/L	30	121-14-2		130
Hexachlorobenzene	Not detected	90		ug/L	30	118-74-1		130
Hexachlorobutadiene	Not detected	100		ug/L	30	87-68-3		500
Hexachloroethane	Not detected	100		ug/L	30	67-72-1		3,000
Nitrobenzene	Not detected	100		ug/L	30	98-95-3		2,000
Pyridine	Not detected	100		ug/L	30	110-86-1		5,000

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/23/20 18:19, 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	12	5		ug/L	1	75-00-3		
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4		
1,1-Dichloroethene	1	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	156	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	64	1		ug/L	1	71-55-6		

Lab Sample ID: S17615.02 (continued)
Sample Tag: Plant 2 Vault_Water

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 09/23/20 18:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
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		
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: S17615
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: RACER Lansing
Submitted: 09/21/2020 16:15 Login User: SRS

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.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.9
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[X] Yes	[ ] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[X] No	[ ] 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: _____

Merit Laboratories, Inc.

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

C.O.C. PAGE # 1 OF 1

127173

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis of Michigan, LLC
ADDRESS: 28550 Cabot Dr Ste 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 810-225-1928 | FAX NO: | P.O. NO: 30048872.00102
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com | QUOTE NO:

INVOICE TO

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

PROJECT NO./NAME: RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: M Samp, E Feenstra

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES

Project Locations: ☐ Detroit ☐ New York ☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs Solid	TCLP SVOCs	TCLP Metals	pH	Flashpoint	PCBs
176150.01	09/21/2020	1200	Plant 2 Vault_NAPL	O	1	1							X	X	X	X	X	X
.02	09/21/2020	1200	Plant 2 Vault_Water	L	6	3	3						X	X	X	X	X	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Marina R Samp/Arcadis ☑ Sampler	09/21/2020	1615
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
[signature]	9/21/20	1615
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 4.9

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

Rev 5 18 12

Quality Control Report

Report ID: QC-S17615-01
Generated on 10/06/2020

Report to

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

Phone: 248-994-2272 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S17615.01-S17615.02
Project: RACER Lansing
Submitted Date/Time: 09/21/2020 16:15
Sampled by: M. Samp / E. Feenstra
P.O. #: 30042872.00102

QC Report Sections

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: S17615.01
Sample Tag: Plant 2 Vault_NAPL
Collected Date/Time: 09/21/2020 12:00
Matrix: Oil
COC Reference: 127173

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Barium, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Cadmium, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Chromium, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Lead, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Mercury, TCLP	SW7471B	09/25/20 14:32	HG2-HG3-20-0925A	HGD-092520-1	No	BLK/LCS/MS/MSD/DU
Selenium, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Silver, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Organics - PCBs/Pesticides						
PCB List	SW8082A	09/22/20 16:16	E200922	PA200922S1	Yes	BLK/LCS/LCSD
Organics - Semi-Volatiles						
TCLP Semi Volatiles	SW8270D	09/24/20 19:56	Z200924	TF200922W01	Yes	BLK/LCS/LCSD
Organics - Volatiles						
Volatile Organics	SW5035A/8260C	10/05/20 15:33	201005A5	VF201005S1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S17615.02
Sample Tag: Plant 2 Vault_Water
Collected Date/Time: 09/21/2020 12:00
Matrix: Liquid
COC Reference: 127173

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Barium, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Cadmium, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Chromium, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Lead, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Mercury, TCLP	SW7471B	09/25/20 14:34	HG2-HG3-20-0925A	HGD-092520-1	No	BLK/LCS/MS/MSD/DU
Selenium, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Silver, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A	MTD-092520-2	No	BLK/LCS/MS/MSD
Organics - PCBs/Pesticides						
PCB	E608.3	09/28/20 18:41	E200928	PA200924W1	Yes	BLK/LCS/LCSD
Organics - Semi-Volatiles						
TCLP Semi Volatiles	SW8270D	09/24/20 20:19	Z200924	TF200922W01	Yes	BLK/LCS/LCSD
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	09/23/20 18:19	200923A7	VF200923W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Metals, Prep Batch ID: HGD-092520-1

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17615.01	Mercury, TCLP	SW7471B	09/25/20 14:32	HG2-HG3-20-0925A
S17615.02	Mercury, TCLP	SW7471B	09/25/20 14:34	HG2-HG3-20-0925A

Metals, Prep Batch ID: MTD-092520-2

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

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17615.01	Arsenic, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A
S17615.01	Barium, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A
S17615.01	Cadmium, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A
S17615.01	Chromium, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A
S17615.01	Lead, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A
S17615.01	Selenium, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A
S17615.01	Silver, TCLP	SW6020A	09/25/20 12:54	MT4-20-0925A
S17615.02	Arsenic, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A
S17615.02	Barium, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A
S17615.02	Cadmium, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A
S17615.02	Chromium, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A
S17615.02	Lead, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A
S17615.02	Selenium, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A
S17615.02	Silver, TCLP	SW6020A	09/25/20 12:57	MT4-20-0925A

Organics - PCBs/Pesticides, Prep Batch ID: PA200922S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17615.01	PCB List	SW8082A	09/22/20 16:16	E200922

Organics - PCBs/Pesticides, Prep Batch ID: PA200924W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17615.02	PCB	E608.3	09/28/20 18:41	E200928

Organics - Semi-Volatiles, Prep Batch ID: TF200922W01

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17615.01	TCLP Semi Volatiles	SW8270D	09/24/20 19:56	Z200924
S17615.02	TCLP Semi Volatiles	SW8270D	09/24/20 20:19	Z200924

Organics - Volatiles, Prep Batch ID: VF200923W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17615.02	Volatile Organics - DEQ List	SW5030C/8260C	09/23/20 18:19	200923A7

Organics - Volatiles, Prep Batch ID: VF201005S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17615.01	Volatile Organics	SW5035A/8260C	10/05/20 15:33	201005A5

QC Report - Surrogates per Lab Sample

Lab Sample ID: S17615.01

Sample Tag: Plant 2 Vault_NAPL

Collected Date/Time: 09/21/2020 12:00

Matrix: Oil

COC Reference: 127173

Organics - PCBs/Pesticides, Analysis: PCB List

Run in Batch: E200922, Run Date: 09/22/2020 16:16, Matrix: SO, Dilution: 3

Surrogate	Flags	**%Rec**	LCL	UCL
TCX	W	**116.40**	33.0	135.3
DCBP	W	**51.30**	30.0	137.0

Organics - Semi-Volatiles, Analysis: TCLP Semi Volatiles

Run in Batch: Z200924, Run Date: 09/24/2020 19:56, Matrix: WW, Dilution: 50

Surrogate	Flags	**%Rec**	LCL	UCL
2-Fluorophenol	*	**0.0**	10.0	110.0
Phenol-D5	*	**0.0**	10.0	110.0
Nitrobenzene-D5	*	**0.0**	10.0	114.0
2-Fluorobiphenyl	*	**0.0**	10.0	116.0
2,4,6-Tribromophenol	*	**0.0**	10.0	123.0
Terphenyl-D14	*	**0.0**	10.0	141.0

Organics - Volatiles, Analysis: Volatile Organics

Run in Batch: 201005A5, Run Date: 10/05/2020 15:33, Matrix: SO, Dilution: 500

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**96.3**	81.0	124.0
1,2-Dichloroethane-D4		**93.9**	71.0	124.0
Toluene-D8		**102.0**	83.0	120.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S17615.02

Sample Tag: Plant 2 Vault_Water

Collected Date/Time: 09/21/2020 12:00

Matrix: Liquid

COC Reference: 127173

Organics - PCBs/Pesticides, Analysis: PCB

Run in Batch: E200928, Run Date: 09/28/2020 18:41, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
TCX		**70.80**	34.1	137.1
DCBP		**39.80**	30.0	138.6

Organics - Semi-Volatiles, Analysis: TCLP Semi Volatiles

Run in Batch: Z200924, Run Date: 09/24/2020 20:19, Matrix: WW, Dilution: 30

Surrogate	Flags	**%Rec**	LCL	UCL
2-Fluorophenol		**51.4**	10.0	110.0
Phenol-D5		**50.7**	10.0	110.0
Nitrobenzene-D5		**53.9**	10.0	114.0
2-Fluorobiphenyl		**52.5**	10.0	116.0
2,4,6-Tribromophenol		**43.5**	10.0	123.0
Terphenyl-D14		**74.0**	10.0	141.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 200923A7, Run Date: 09/23/2020 18:19, Matrix: WW, Dilution: 1

Surrogate	Flags	**%Rec**	LCL	UCL
4-Bromofluorobenzene		**109.3**	80.0	124.0
1,2-Dichloroethane-D4		**95.6**	72.0	125.0
Toluene-D8		**102.9**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - PCBs/Pesticides, Prep Batch ID: PA200922S1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: a20092206.sblk-s.01

Run in Batch: A200922, Run Date: 09/22/2020 12:48, Prep Date: 09/22/2020, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
TCX		**81.80**	33.0	135.3
DCBP		**72.00**	30.0	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: a20092207.slcs-s.01

Run in Batch: A200922, Run Date: 09/22/2020 13:02, Prep Date: 09/22/2020, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
TCX		**72.10**	33.0	135.3
DCBP		**65.50**	30.0	137.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: a20092208.slcs-s.01d, Parent Sample ID: a20092207.slcs-s.01

Run in Batch: A200922, Run Date: 09/22/2020 13:17, Prep Date: 09/22/2020, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
TCX		**75.80**	33.0	135.3
DCBP		**73.30**	30.0	137.0

QC Report - Surrogates per QC Sample

Organics - PCBs/Pesticides, Prep Batch ID: PA200924W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: a20092823.sblk-s.01

Run in Batch: A200928, Run Date: 09/28/2020 18:49, Prep Date: 09/24/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
TCX		**60.40**	34.1	137.1
DCBP		**59.50**	30.0	138.6

Laboratory Control Sample (LCS)

Lab Sample ID: a20092824.slcs-s.01

Run in Batch: A200928, Run Date: 09/28/2020 19:00, Prep Date: 09/24/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
TCX		**71.60**	34.1	137.1
DCBP		**65.30**	30.0	138.6

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: a20092825.slcs-s.01d, Parent Sample ID: a20092824.slcs-s.01

Run in Batch: A200928, Run Date: 09/28/2020 19:11, Prep Date: 09/24/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
TCX		**64.20**	34.1	137.1
DCBP		**58.40**	30.0	138.6

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: TF200922W01

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: Z200924.BLKW22A

Run in Batch: Z200924, Run Date: 09/24/2020 15:37, Prep Date: 09/22/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		**61.6**	10.0	110.0
Phenol-D5		**60.4**	10.0	110.0
Nitrobenzene-D5		**64.7**	10.0	114.0
2-Fluorobiphenyl		**57.3**	10.0	116.0
2,4,6-Tribromophenol		**68.0**	10.0	123.0
Terphenyl-D14		**55.9**	10.0	141.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z200924.LCSW22A

Run in Batch: Z200924, Run Date: 09/24/2020 16:00, Prep Date: 09/22/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		**62.8**	10.0	110.0
Phenol-D5		**58.6**	10.0	110.0
Nitrobenzene-D5		**67.3**	10.0	114.0
2-Fluorobiphenyl		**59.3**	10.0	116.0
2,4,6-Tribromophenol		**73.1**	10.0	123.0
Terphenyl-D14		**60.5**	10.0	141.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: Z200924.LCSDW22A, Parent Sample ID: Z200924.LCSW22A

Run in Batch: Z200924, Run Date: 09/24/2020 16:24, Prep Date: 09/22/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		**62.9**	10.0	110.0
Phenol-D5		**59.6**	10.0	110.0
Nitrobenzene-D5		**68.1**	10.0	114.0
2-Fluorobiphenyl		**59.1**	10.0	116.0
2,4,6-Tribromophenol		**73.3**	10.0	123.0
Terphenyl-D14		**60.6**	10.0	141.0

Organics - Volatiles, Prep Batch ID: VF200923W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 200923A7.BLKW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 12:16, Prep Date: 09/23/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**106.3**	80.0	124.0
1,2-Dichloroethane-D4		**89.3**	72.0	125.0
Toluene-D8		**102.7**	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 200923A7.LCSW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 11:00, Prep Date: 09/23/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**107.2**	80.0	124.0
1,2-Dichloroethane-D4		**96.1**	72.0	125.0
Toluene-D8		**103.1**	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 200923A7.LCSDW23A, Parent Sample ID: 200923A7.LCSW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 11:19, Prep Date: 09/23/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**105.8**	80.0	124.0
1,2-Dichloroethane-D4		**91.4**	72.0	125.0
Toluene-D8		**102.1**	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF201005S1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 201005A5.BLKS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 14:17, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**102.4**	81.0	124.0
1,2-Dichloroethane-D4		**102.9**	71.0	124.0
Toluene-D8		**106.1**	83.0	120.0

Laboratory Control Sample (LCS)

Lab Sample ID: 201005A5.LCSS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 13:03, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**113.7**	81.0	124.0
1,2-Dichloroethane-D4		**97.6**	71.0	124.0
Toluene-D8		**104.7**	83.0	120.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 201005A5.LCSDS05A, Parent Sample ID: 201005A5.LCSS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 13:22, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		**115.4**	81.0	124.0
1,2-Dichloroethane-D4		**96.1**	71.0	124.0
Toluene-D8		**106.0**	83.0	120.0

Metals, Prep Batch ID: HGD-092520-1

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

Blank (BLK)

Lab Sample ID: HG2-HG3-20-0925A.016

Run in Batch: HG2-HG3-20-0925A, Run Date: 09/25/2020 14:01, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Mercury		ND	0.05	ug/L

Laboratory Control Sample (LCS)

Lab Sample ID: HG2-HG3-20-0925A.015

Run in Batch: HG2-HG3-20-0925A, Run Date: 09/25/2020 13:59, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		93	85	115

Matrix Spike (MS)

Lab Sample ID: HG2-HG3-20-0925A.021, Parent Sample ID: S17667.01

Run in Batch: HG2-HG3-20-0925A, Run Date: 09/25/2020 14:10, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		90	80	120

Matrix Spike (MS)

Lab Sample ID: HG2-HG3-20-0925A.029, Parent Sample ID: S17614.01

Run in Batch: HG2-HG3-20-0925A, Run Date: 09/25/2020 14:25, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Mercury		95	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: HG2-HG3-20-0925A.030, Parent Sample ID: HG2-HG3-20-0925A.029

Run in Batch: HG2-HG3-20-0925A, Run Date: 09/25/2020 14:26, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury		97	80	120	2	20

Duplicate (DUP)

Lab Sample ID: HG2-HG3-20-0925A.019, Parent Sample ID: S17644.01

Run in Batch: HG2-HG3-20-0925A, Run Date: 09/25/2020 14:06, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 1

Analyte	Flags	RPD	RPD CL
Mercury		0	20

Metals, Prep Batch ID: MTD-092520-2

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

Blank (BLK)

Lab Sample ID: MT4-20-0925A.023.LRB

Run in Batch: MT4-20-0925A, Run Date: 09/25/2020 11:41, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Barium		ND	0.001	mg/L
Cadmium		ND	0.0001	mg/L
Chromium		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Selenium		ND	0.001	mg/L
Silver		ND	0.0001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-20-0925A.021.LCS

Run in Batch: MT4-20-0925A, Run Date: 09/25/2020 11:37, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		98	85	115
Barium		100	85	115
Cadmium		102	85	115
Chromium		98	85	115
Lead		107	85	115
Selenium		100	85	115
Silver		98	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-20-0925A.044.MS, Parent Sample ID: S17708.08

Run in Batch: MT4-20-0925A, Run Date: 09/25/2020 12:35, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		96	75	125
Barium		92	75	125
Cadmium		96	75	125
Chromium		92	75	125
Lead		100	75	125
Selenium		93	75	125
Silver		87	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-20-0925A.068.MS, Parent Sample ID: S17709.07

Run in Batch: MT4-20-0925A, Run Date: 09/25/2020 13:22, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL
Arsenic		99	75	125
Barium		98	75	125
Cadmium		89	75	125
Chromium		93	75	125
Lead		90	75	125
Selenium		95	75	125
Silver		78	75	125

Metals, Prep Batch ID: MTD-092520-2 (continued)

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

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-20-0925A.045.MSD, Parent Sample ID: MT4-20-0925A.044.MS

Run in Batch: MT4-20-0925A, Run Date: 09/25/2020 12:36, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		95	75	125	1	20
Barium		95	75	125	2	20
Cadmium		99	75	125	3	20
Chromium		97	75	125	5	20
Lead		100	75	125	0	20
Selenium		100	75	125	7	20
Silver		92	75	125	5	20

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-20-0925A.069.MSD, Parent Sample ID: MT4-20-0925A.068.MS

Run in Batch: MT4-20-0925A, Run Date: 09/25/2020 13:23, Prep Date: 09/25/2020, Matrix: Liquid, Dilution: 5

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		98	75	125	2	20
Barium		99	75	125	1	20
Cadmium		90	75	125	1	20
Chromium		94	75	125	1	20
Lead		94	75	125	4	20
Selenium		103	75	125	8	20
Silver		81	75	125	4	20

Organics - PCBs/Pesticides, Prep Batch ID: PA200922S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: a20092206.sblk-s.01

Run in Batch: A200922, Run Date: 09/22/2020 12:48, Prep Date: 09/22/2020, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PCB-1016		ND	5.00	ug/kg
PCB-1242		ND	5.00	ug/kg
PCB-1221		ND	5.00	ug/kg
PCB-1232		ND	5.00	ug/kg
PCB-1248		ND	5.00	ug/kg
PCB-1254		ND	5.00	ug/kg
PCB-1260		ND	5.00	ug/kg

Laboratory Control Sample (LCS)

Lab Sample ID: a20092207.slcs-s.01

Run in Batch: A200922, Run Date: 09/22/2020 13:02, Prep Date: 09/22/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PCB-1016/1260		82.22	50.0	125.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: a20092208.slcs-s.01d, Parent Sample ID: a20092207.slcs-s.01

Run in Batch: A200922, Run Date: 09/22/2020 13:17, Prep Date: 09/22/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PCB-1016/1260		94.64	50.0	125.0	14.0	20.0

Organics - PCBs/Pesticides, Prep Batch ID: PA200924W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: a20092823.sblk-s.01

Run in Batch: A200928, Run Date: 09/28/2020 18:49, Prep Date: 09/24/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PCB-1016		ND	0.10	ug/L
PCB-1221		ND	0.10	ug/L
PCB-1232		ND	0.10	ug/L
PCB-1242		ND	0.10	ug/L
PCB-1248		ND	0.10	ug/L
PCB-1254		ND	0.10	ug/L
PCB-1260		ND	0.10	ug/L

Laboratory Control Sample (LCS)

Lab Sample ID: a20092824.slcs-s.01

Run in Batch: A200928, Run Date: 09/28/2020 19:00, Prep Date: 09/24/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PCB-1016/1260		87.44	50.0	125.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: a20092825.slcs-s.01d, Parent Sample ID: a20092824.slcs-s.01

Run in Batch: A200928, Run Date: 09/28/2020 19:11, Prep Date: 09/24/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PCB-1016/1260		79.14	50.0	125.0	10.0	20.0

Organics - Semi-Volatiles, Prep Batch ID: TF200922W01

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: Z200924.BLKW22A

Run in Batch: Z200924, Run Date: 09/24/2020 15:37, Prep Date: 09/22/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
2-Methylphenol (o-Cresol)		ND	0.0010	mg/l
3-, 4-Methylphenol (p,m-Cresol)		ND	0.0010	mg/l
Pentachlorophenol		ND	0.0010	mg/l
2,4,5-Trichlorophenol		ND	0.0010	mg/l
2,4,6-Trichlorophenol		ND	0.0010	mg/l
2,4-Dinitrotoluene		ND	0.0010	mg/l
Hexachlorobenzene		ND	0.0010	mg/l
Hexachlorobutadiene		ND	0.0010	mg/l
Hexachloroethane		ND	0.0010	mg/l
Nitrobenzene		ND	0.0010	mg/l
Pyridine		ND	0.0010	mg/l

Laboratory Control Sample (LCS)

Lab Sample ID: Z200924.LCSW22A

Run in Batch: Z200924, Run Date: 09/24/2020 16:00, Prep Date: 09/22/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylphenol (o-Cresol)		71.0	37.3	120.0
3-, 4-Methylphenol (p,m-Cresol)		71.2	40.1	124.4
Pentachlorophenol		44.0	10.0	120.0
2,4,5-Trichlorophenol		60.2	26.2	128.4
2,4,6-Trichlorophenol		61.3	28.3	130.8
2,4-Dinitrotoluene		69.1	36.1	133.0
Hexachlorobenzene		71.6	37.0	121.6
Hexachlorobutadiene		59.0	32.2	120.0
Hexachloroethane		50.9	35.2	120.0
Nitrobenzene		63.5	36.6	120.0
Pyridine		34.5	10.0	120.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: Z200924.LCSDW22A, Parent Sample ID: Z200924.LCSW22A

Run in Batch: Z200924, Run Date: 09/24/2020 16:24, Prep Date: 09/22/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
2-Methylphenol (o-Cresol)		69.8	37.3	120.0	1.7	30.0
3-, 4-Methylphenol (p,m-Cresol)		72.3	40.1	124.4	1.5	30.0
Pentachlorophenol		44.9	10.0	120.0	2.1	30.0
2,4,5-Trichlorophenol		60.0	26.2	128.4	0.4	30.0
2,4,6-Trichlorophenol		60.8	28.3	130.8	0.9	30.0
2,4-Dinitrotoluene		67.2	36.1	133.0	2.8	30.0
Hexachlorobenzene		72.6	37.0	121.6	1.5	30.0
Hexachlorobutadiene		58.0	32.2	120.0	1.8	30.0
Hexachloroethane		47.8	35.2	120.0	6.2	30.0
Nitrobenzene		64.3	36.6	120.0	1.3	30.0
Pyridine		35.1	10.0	120.0	1.7	30.0

Organics - Volatiles, Prep Batch ID: VF200923W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 200923A7.BLKW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 12:16, Prep Date: 09/23/2020, 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

Organics - Volatiles, Prep Batch ID: VF200923W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 200923A7.BLKW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 12:16, Prep Date: 09/23/2020, 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: 200923A7.LCSW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 11:00, Prep Date: 09/23/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		110.2	67.4	121.2
Acetone		116.6	29.9	161.5
Methyl iodide		112.7	68.8	116.4
Carbon disulfide		107.9	63.8	137.4
tert-Methyl butyl ether (MTBE)		112.3	73.2	122.4
Acrylonitrile		111.5	69.9	128.9
2-Butanone (MEK)		111.9	44.0	134.4
Dichlorodifluoromethane		147.2	10.0	222.8
Chloromethane		125.3	23.8	166.5
Vinyl chloride		123.4	43.5	149.1
Bromomethane		127.2	56.8	151.3
Chloroethane		122.2	53.4	149.4
Trichlorofluoromethane		124.0	59.7	151.8
1,1-Dichloroethene		108.3	69.6	139.4
Methylene chloride		113.3	73.3	121.1
trans-1,2-Dichloroethene		108.2	73.6	129.3
1,1-Dichloroethane		111.1	71.5	126.2
cis-1,2-Dichloroethene		107.6	76.6	122.1
Tetrahydrofuran		109.3	59.0	117.9
Chloroform		111.9	78.4	124.0

Organics - Volatiles, Prep Batch ID: VF200923W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 200923A7.LCSW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 11:00, Prep Date: 09/23/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		111.9	78.2	120.8
1,1,1-Trichloroethane		116.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		117.2	71.6	125.2
2-Hexanone		123.0	55.4	136.9
Carbon tetrachloride		116.2	72.6	133.0
Benzene		108.1	79.9	124.9
1,2-Dichloroethane		106.5	76.0	126.3
Trichloroethene		111.1	79.7	124.2
1,2-Dichloropropane		113.0	78.6	126.4
Bromodichloromethane		112.1	80.4	128.2
Dibromomethane		113.3	76.9	122.1
cis-1,3-Dichloropropene		115.6	79.8	129.9
Toluene		111.4	79.8	124.5
trans-1,3-Dichloropropene		117.0	74.0	131.3
1,1,2-Trichloroethane		117.1	78.7	123.1
Tetrachloroethene		117.1	74.5	124.5
trans-1,4-Dichloro-2-butene		102.3	68.6	135.4
Dibromochloromethane		107.1	74.6	127.2
1,2-Dibromoethane		105.8	70.3	133.7
Chlorobenzene		106.2	79.2	122.7
1,1,1,2-Tetrachloroethane		106.2	80.3	128.2
Ethylbenzene		104.4	79.5	129.1
p,m-Xylene		103.2	79.4	132.2
o-Xylene		105.0	80.2	131.0
Styrene		108.1	69.5	126.7
Isopropylbenzene		105.1	74.4	121.5
Bromoform		105.1	69.4	128.0
1,1,2,2-Tetrachloroethane		106.4	79.8	126.3
1,2,3-Trichloropropane		106.5	78.3	138.8
n-Propylbenzene		104.3	82.0	130.7
Bromobenzene		105.4	78.7	124.6
1,3,5-Trimethylbenzene		105.7	81.3	128.9
tert-Butylbenzene		102.7	80.7	128.9
1,2,4-Trimethylbenzene		105.4	81.4	130.8
sec-Butylbenzene		97.4	77.4	129.8
p-Isopropyltoluene		99.4	79.8	137.5
1,3-Dichlorobenzene		97.1	77.0	131.3
1,4-Dichlorobenzene		95.7	20.7	137.7
1,2-Dichlorobenzene		96.8	10.0	166.2
1,2,3-Trimethylbenzene		97.1	76.3	124.2
n-Butylbenzene		96.1	80.0	133.3
Hexachloroethane		98.6	23.8	138.1
1,2-Dibromo-3-chloropropane		101.3	21.2	189.4
1,2,4-Trichlorobenzene		92.8	27.4	143.4
1,2,3-Trichlorobenzene		87.8	75.4	131.4
Naphthalene		90.7	32.9	135.8

Organics - Volatiles, Prep Batch ID: VF200923W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 200923A7.LCSW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 11:00, Prep Date: 09/23/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		86.3	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 200923A7.LCSDW23A, Parent Sample ID: 200923A7.LCSW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 11:19, Prep Date: 09/23/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		100.4	67.4	121.2	9.3	30.0
Acetone	*	66.7	29.9	161.5	54.5	30.0
Methyl iodide		104.8	68.8	116.4	7.3	30.0
Carbon disulfide		102.2	63.8	137.4	5.4	30.0
tert-Methyl butyl ether (MTBE)		99.5	73.2	122.4	12.0	30.0
Acrylonitrile		97.3	69.9	128.9	13.6	30.0
2-Butanone (MEK)		99.1	44.0	134.4	12.1	30.0
Dichlorodifluoromethane		139.8	10.0	222.8	5.2	30.0
Chloromethane		118.2	23.8	166.5	5.9	30.0
Vinyl chloride		117.7	43.5	149.1	4.7	30.0
Bromomethane		117.5	56.8	151.3	7.9	30.0
Chloroethane		116.9	53.4	149.4	4.4	30.0
Trichlorofluoromethane		118.1	59.7	151.8	4.9	30.0
1,1-Dichloroethene		101.6	69.6	139.4	6.3	30.0
Methylene chloride		104.9	73.3	121.1	7.7	30.0
trans-1,2-Dichloroethene		102.3	73.6	129.3	5.6	30.0
1,1-Dichloroethane		103.8	71.5	126.2	6.8	30.0
cis-1,2-Dichloroethene		101.2	76.6	122.1	6.2	30.0
Tetrahydrofuran		94.1	59.0	117.9	14.9	30.0
Chloroform		105.9	78.4	124.0	5.5	30.0
Bromochloromethane		102.9	78.2	120.8	8.3	30.0
1,1,1-Trichloroethane		110.3	79.4	130.9	5.6	30.0
4-Methyl-2-pentanone (MIBK)		106.1	71.6	125.2	9.9	30.0
2-Hexanone		111.3	55.4	136.9	10.0	30.0
Carbon tetrachloride		112.2	72.6	133.0	3.5	30.0
Benzene		102.7	79.9	124.9	5.2	30.0
1,2-Dichloroethane		99.3	76.0	126.3	7.0	30.0
Trichloroethene		106.4	79.7	124.2	4.2	30.0
1,2-Dichloropropane		105.7	78.6	126.4	6.6	30.0
Bromodichloromethane		105.7	80.4	128.2	5.8	30.0
Dibromomethane		105.7	76.9	122.1	7.0	30.0
cis-1,3-Dichloropropene		106.4	79.8	129.9	8.3	30.0
Toluene		105.3	79.8	124.5	5.6	30.0
trans-1,3-Dichloropropene		106.7	74.0	131.3	9.2	30.0
1,1,2-Trichloroethane		107.1	78.7	123.1	8.9	30.0
Tetrachloroethene		111.8	74.5	124.5	4.6	30.0
trans-1,4-Dichloro-2-butene		94.0	68.6	135.4	8.4	30.0
Dibromochloromethane		99.6	74.6	127.2	7.3	30.0
1,2-Dibromoethane		99.3	70.3	133.7	6.4	30.0
Chlorobenzene		100.2	79.2	122.7	5.8	30.0

Organics - Volatiles, Prep Batch ID: VF200923W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 200923A7.LCSDW23A, Parent Sample ID: 200923A7.LCSW23A

Run in Batch: 200923A7, Run Date: 09/23/2020 11:19, Prep Date: 09/23/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		101.1	80.3	128.2	4.9	30.0
Ethylbenzene		101.3	79.5	129.1	3.1	30.0
p,m-Xylene		99.8	79.4	132.2	3.4	30.0
o-Xylene		100.6	80.2	131.0	4.3	30.0
Styrene		102.8	69.5	126.7	5.0	30.0
Isopropylbenzene		101.8	74.4	121.5	3.2	30.0
Bromoform		98.1	69.4	128.0	6.9	30.0
1,1,2,2-Tetrachloroethane		98.5	79.8	126.3	7.7	30.0
1,2,3-Trichloropropane		98.6	78.3	138.8	7.6	30.0
n-Propylbenzene		101.0	82.0	130.7	3.2	30.0
Bromobenzene		100.8	78.7	124.6	4.4	30.0
1,3,5-Trimethylbenzene		101.1	81.3	128.9	4.4	30.0
tert-Butylbenzene		98.1	80.7	128.9	4.6	30.0
1,2,4-Trimethylbenzene		100.4	81.4	130.8	4.9	30.0
sec-Butylbenzene		95.9	77.4	129.8	1.6	30.0
p-Isopropyltoluene		97.3	79.8	137.5	2.1	30.0
1,3-Dichlorobenzene		94.4	77.0	131.3	2.9	30.0
1,4-Dichlorobenzene		93.0	20.7	137.7	2.8	30.0
1,2-Dichlorobenzene		92.9	10.0	166.2	4.1	30.0
1,2,3-Trimethylbenzene		94.1	76.3	124.2	3.2	30.0
n-Butylbenzene		94.2	80.0	133.3	2.0	30.0
Hexachloroethane		96.3	23.8	138.1	2.3	30.0
1,2-Dibromo-3-chloropropane		93.8	21.2	189.4	7.7	30.0
1,2,4-Trichlorobenzene		86.3	27.4	143.4	7.3	30.0
1,2,3-Trichlorobenzene		82.9	75.4	131.4	5.8	30.0
Naphthalene		83.1	32.9	135.8	8.7	30.0
2-Methylnaphthalene		92.3	25.5	165.5	6.7	30.0

Organics - Volatiles, Prep Batch ID: VF201005S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 201005A5.BLKS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 14:17, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	50.0	ug/kg
Acetone		ND	500.0	ug/kg
Methyl iodide		ND	50.0	ug/kg
Carbon disulfide		ND	50.0	ug/kg
tert-Methyl butyl ether (MTBE)		ND	50.0	ug/kg
Acrylonitrile		ND	50.0	ug/kg
2-Butanone (MEK)		ND	500.0	ug/kg
Dichlorodifluoromethane		ND	50.0	ug/kg
Chloromethane		ND	50.0	ug/kg
Vinyl chloride		ND	50.0	ug/kg
Bromomethane		ND	50.0	ug/kg
Chloroethane		ND	50.0	ug/kg
Trichlorofluoromethane		ND	50.0	ug/kg
1,1-Dichloroethene		ND	50.0	ug/kg
Methylene chloride		ND	50.0	ug/kg
trans-1,2-Dichloroethene		ND	50.0	ug/kg
1,1-Dichloroethane		ND	50.0	ug/kg
cis-1,2-Dichloroethene		ND	50.0	ug/kg
Tetrahydrofuran		ND	500.0	ug/kg
Chloroform		ND	50.0	ug/kg
Bromochloromethane		ND	50.0	ug/kg
1,1,1-Trichloroethane		ND	50.0	ug/kg
4-Methyl-2-pentanone (MIBK)		ND	500.0	ug/kg
2-Hexanone		ND	500.0	ug/kg
Carbon tetrachloride		ND	50.0	ug/kg
Benzene		ND	50.0	ug/kg
1,2-Dichloroethane		ND	50.0	ug/kg
Trichloroethene		ND	50.0	ug/kg
1,2-Dichloropropane		ND	50.0	ug/kg
Bromodichloromethane		ND	50.0	ug/kg
Dibromomethane		ND	50.0	ug/kg
cis-1,3-Dichloropropene		ND	50.0	ug/kg
Toluene		ND	50.0	ug/kg
trans-1,3-Dichloropropene		ND	50.0	ug/kg
1,1,2-Trichloroethane		ND	50.0	ug/kg
Tetrachloroethene		ND	50.0	ug/kg
trans-1,4-Dichloro-2-butene		ND	50.0	ug/kg
Dibromochloromethane		ND	50.0	ug/kg
1,2-Dibromoethane		ND	50.0	ug/kg
Chlorobenzene		ND	50.0	ug/kg
1,1,1,2-Tetrachloroethane		ND	50.0	ug/kg
Ethylbenzene		ND	50.0	ug/kg
p,m-Xylene		ND	50.0	ug/kg
o-Xylene		ND	50.0	ug/kg
Styrene		ND	50.0	ug/kg
Isopropylbenzene		ND	50.0	ug/kg

Organics - Volatiles, Prep Batch ID: VF201005S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 201005A5.BLKS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 14:17, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	50.0	ug/kg
1,1,2,2-Tetrachloroethane		ND	50.0	ug/kg
1,2,3-Trichloropropane		ND	50.0	ug/kg
n-Propylbenzene		ND	50.0	ug/kg
Bromobenzene		ND	50.0	ug/kg
1,3,5-Trimethylbenzene		ND	50.0	ug/kg
tert-Butylbenzene		ND	50.0	ug/kg
1,2,4-Trimethylbenzene		ND	50.0	ug/kg
sec-Butylbenzene		ND	50.0	ug/kg
p-Isopropyltoluene		ND	50.0	ug/kg
1,3-Dichlorobenzene		ND	50.0	ug/kg
1,4-Dichlorobenzene		ND	50.0	ug/kg
1,2-Dichlorobenzene		ND	50.0	ug/kg
1,2,3-Trimethylbenzene		ND	50.0	ug/kg
n-Butylbenzene		ND	50.0	ug/kg
Hexachloroethane		ND	50.0	ug/kg
1,2-Dibromo-3-chloropropane		ND	50.0	ug/kg
1,2,4-Trichlorobenzene		ND	50.0	ug/kg
1,2,3-Trichlorobenzene		ND	50.0	ug/kg
Naphthalene		ND	50.0	ug/kg
2-Methylnaphthalene		ND	50.0	ug/kg

Laboratory Control Sample (LCS)

Lab Sample ID: 201005A5.LCSS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 13:03, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		109.0	51.7	123.0
Acetone		105.1	25.3	155.1
Methyl iodide	*	119.4	56.9	110.8
Carbon disulfide		111.9	57.0	123.0
tert-Methyl butyl ether (MTBE)		113.2	67.5	123.7
Acrylonitrile		113.8	58.7	133.0
2-Butanone (MEK)		110.9	38.7	136.9
Dichlorodifluoromethane		101.2	10.0	171.8
Chloromethane		103.4	30.2	152.7
Vinyl chloride		108.1	45.3	138.7
Bromomethane		94.6	10.0	157.4
Chloroethane		105.7	10.0	169.1
Trichlorofluoromethane		93.3	25.7	157.8
1,1-Dichloroethene		115.4	59.2	137.5
Methylene chloride		117.1	70.5	121.5
trans-1,2-Dichloroethene		114.4	72.5	128.8
1,1-Dichloroethane		114.7	72.5	123.4
cis-1,2-Dichloroethene		112.6	75.0	120.5
Tetrahydrofuran		103.4	48.2	125.7
Chloroform		111.0	74.6	123.2

Organics - Volatiles, Prep Batch ID: VF201005S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 201005A5.LCSS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 13:03, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		115.5	72.3	122.8
1,1,1-Trichloroethane		107.9	73.8	128.9
4-Methyl-2-pentanone (MIBK)		113.7	60.4	133.8
2-Hexanone		115.3	45.7	141.9
Carbon tetrachloride		108.6	70.1	132.7
Benzene		117.5	74.6	128.9
1,2-Dichloroethane		106.1	73.2	125.4
Trichloroethene		115.5	74.1	127.6
1,2-Dichloropropane		114.8	77.6	124.4
Bromodichloromethane		108.2	76.7	128.4
Dibromomethane		118.5	72.5	127.3
cis-1,3-Dichloropropene		112.4	79.3	128.3
Toluene		116.6	74.8	129.2
trans-1,3-Dichloropropene		107.3	74.5	129.7
1,1,2-Trichloroethane		113.1	71.3	125.7
Tetrachloroethene	*	138.3	73.0	124.7
trans-1,4-Dichloro-2-butene		106.8	58.3	143.3
Dibromochloromethane		115.2	68.9	132.7
1,2-Dibromoethane		115.1	71.4	129.3
Chlorobenzene		119.1	74.2	128.1
1,1,1,2-Tetrachloroethane		120.7	76.6	133.0
Ethylbenzene		119.3	77.7	130.4
p,m-Xylene		119.5	79.8	132.0
o-Xylene		116.2	79.4	132.3
Styrene		119.1	71.3	119.3
Isopropylbenzene		121.5	70.3	128.2
Bromoform		113.5	54.7	137.4
1,1,2,2-Tetrachloroethane		115.8	65.4	134.9
1,2,3-Trichloropropane		114.8	67.2	154.5
n-Propylbenzene		121.9	77.3	135.2
Bromobenzene		126.1	74.0	132.4
1,3,5-Trimethylbenzene		123.4	75.6	137.0
tert-Butylbenzene		117.5	75.6	134.6
1,2,4-Trimethylbenzene		122.3	76.9	139.1
sec-Butylbenzene		115.7	72.7	135.6
p-Isopropyltoluene		118.8	77.1	140.9
1,3-Dichlorobenzene		115.6	77.3	131.0
1,4-Dichlorobenzene		115.4	33.1	125.8
1,2-Dichlorobenzene		115.4	73.5	132.7
1,2,3-Trimethylbenzene		111.9	70.9	130.2
n-Butylbenzene		113.4	75.0	138.6
Hexachloroethane		111.1	55.5	129.0
1,2-Dibromo-3-chloropropane		113.6	54.1	156.4
1,2,4-Trichlorobenzene		127.3	37.1	131.3
1,2,3-Trichlorobenzene		125.5	59.4	157.9
Naphthalene		120.0	39.3	129.2

Organics - Volatiles, Prep Batch ID: VF201005S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 201005A5.LCSS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 13:03, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		121.5	10.0	175.9

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 201005A5.LCSDS05A, Parent Sample ID: 201005A5.LCSS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 13:22, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		99.3	51.7	123.0	9.3	30.0
Acetone		92.4	25.3	155.1	12.9	30.0
Methyl iodide		108.2	56.9	110.8	9.9	30.0
Carbon disulfide		100.1	57.0	123.0	11.1	30.0
tert-Methyl butyl ether (MTBE)		100.5	67.5	123.7	12.0	30.0
Acrylonitrile		102.0	58.7	133.0	10.9	30.0
2-Butanone (MEK)		102.2	38.7	136.9	8.2	30.0
Dichlorodifluoromethane		95.3	10.0	171.8	5.9	30.0
Chloromethane		94.1	30.2	152.7	9.4	30.0
Vinyl chloride		100.9	45.3	138.7	6.9	30.0
Bromomethane		84.8	10.0	157.4	10.9	30.0
Chloroethane		93.2	10.0	169.1	12.6	30.0
Trichlorofluoromethane		83.0	25.7	157.8	11.7	30.0
1,1-Dichloroethene		103.5	59.2	137.5	10.9	30.0
Methylene chloride		106.7	70.5	121.5	9.3	30.0
trans-1,2-Dichloroethene		102.1	72.5	128.8	11.3	30.0
1,1-Dichloroethane		102.2	72.5	123.4	11.5	30.0
cis-1,2-Dichloroethene		104.4	75.0	120.5	7.6	30.0
Tetrahydrofuran		99.8	48.2	125.7	3.6	30.0
Chloroform		102.4	74.6	123.2	8.1	30.0
Bromochloromethane		107.5	72.3	122.8	7.2	30.0
1,1,1-Trichloroethane		96.6	73.8	128.9	11.1	30.0
4-Methyl-2-pentanone (MIBK)		107.9	60.4	133.8	5.3	30.0
2-Hexanone		109.5	45.7	141.9	5.2	30.0
Carbon tetrachloride		99.2	70.1	132.7	9.1	30.0
Benzene		108.0	74.6	128.9	8.4	30.0
1,2-Dichloroethane		97.9	73.2	125.4	8.0	30.0
Trichloroethene		104.7	74.1	127.6	9.9	30.0
1,2-Dichloropropane		103.9	77.6	124.4	9.9	30.0
Bromodichloromethane		98.9	76.7	128.4	9.1	30.0
Dibromomethane		110.3	72.5	127.3	7.2	30.0
cis-1,3-Dichloropropene		103.9	79.3	128.3	7.9	30.0
Toluene		106.9	74.8	129.2	8.6	30.0
trans-1,3-Dichloropropene		100.9	74.5	129.7	6.2	30.0
1,1,2-Trichloroethane		104.9	71.3	125.7	7.5	30.0
Tetrachloroethene	*	131.9	73.0	124.7	4.7	30.0
trans-1,4-Dichloro-2-butene		101.9	58.3	143.3	4.6	30.0
Dibromochloromethane		107.5	68.9	132.7	6.9	30.0
1,2-Dibromoethane		107.9	71.4	129.3	6.4	30.0
Chlorobenzene		113.6	74.2	128.1	4.7	30.0

Organics - Volatiles, Prep Batch ID: VF201005S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 201005A5.LCSDS05A, Parent Sample ID: 201005A5.LCSS05A

Run in Batch: 201005A5, Run Date: 10/05/2020 13:22, Prep Date: 10/05/2020, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		111.9	76.6	133.0	7.6	30.0
Ethylbenzene		111.7	77.7	130.4	6.6	30.0
p,m-Xylene		110.6	79.8	132.0	7.7	30.0
o-Xylene		108.5	79.4	132.3	6.8	30.0
Styrene		112.5	71.3	119.3	5.6	30.0
Isopropylbenzene		114.6	70.3	128.2	5.8	30.0
Bromoform		106.7	54.7	137.4	6.2	30.0
1,1,2,2-Tetrachloroethane		110.4	65.4	134.9	4.7	30.0
1,2,3-Trichloropropane		110.6	67.2	154.5	3.7	30.0
n-Propylbenzene		114.7	77.3	135.2	6.1	30.0
Bromobenzene		117.1	74.0	132.4	7.4	30.0
1,3,5-Trimethylbenzene		114.9	75.6	137.0	7.1	30.0
tert-Butylbenzene		109.6	75.6	134.6	6.9	30.0
1,2,4-Trimethylbenzene		115.2	76.9	139.1	6.0	30.0
sec-Butylbenzene		105.1	72.7	135.6	9.6	30.0
p-Isopropyltoluene		108.8	77.1	140.9	8.8	30.0
1,3-Dichlorobenzene		106.7	77.3	131.0	8.0	30.0
1,4-Dichlorobenzene		105.2	33.1	125.8	9.2	30.0
1,2-Dichlorobenzene		108.9	73.5	132.7	5.8	30.0
1,2,3-Trimethylbenzene		102.8	70.9	130.2	8.4	30.0
n-Butylbenzene		104.1	75.0	138.6	8.5	30.0
Hexachloroethane		103.1	55.5	129.0	7.5	30.0
1,2-Dibromo-3-chloropropane		107.0	54.1	156.4	6.0	30.0
1,2,4-Trichlorobenzene		119.3	37.1	131.3	6.5	30.0
1,2,3-Trichlorobenzene		119.4	59.4	157.9	5.0	30.0
Naphthalene		113.4	39.3	129.2	5.7	30.0
2-Methylnaphthalene		117.7	10.0	175.9	3.2	30.0

Merit Laboratories, Inc.

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C.O.C. PAGE # 1 OF 1

127173

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis of Michigan, LLC
ADDRESS: 28550 Cabot Dr Ste 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 810-225-1928 | FAX NO: | P.O. NO: 30048872.00102
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com | QUOTE NO:

INVOICE TO

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

PROJECT NO./NAME: RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: M Samp, E Feenstra

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☒ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES

Project Locations: ☐ Detroit ☐ New York ☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	VOCs Solid	TCLP SVOCs	TCLP Metals	pH	Flashpoint	PCBs
176150.01	09/21/2020	1200	Plant 2 Vault_NAPL	O	1	1							X	X	X	X	X	X
.02	09/21/2020	1200	Plant 2 Vault_Water	L	6	3	3						X	X	X	X	X	X

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Marina R Samp/Arcadis ☑ Sampler	09/21/2020	1615
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
[signature]	9/21/20	1615
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 4.9

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

Rev 5 18 12

Analytical Laboratory Report

Report ID: S17767.01(01)+QC01
Generated on 10/12/2020

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

Addtional Contacts: Alex Villhauer, Marina Samp, Kaitlyn Voet

Report produced by

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

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

Contacts for report questions:
John Laverty (johnlaverty@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S17767.01-S17767.02
Project: RACER Lansing
Collected Date(s): 09/21/2020
Submitted Date/Time: 09/21/2020 16:15
Sampled by: M. Samp / E. Feenstra
P.O. #: 30042872.00102

Table of Contents

Maya Murshak
Technical Director

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.
Methods may be modified for improved performance.
Results reported on a dry weight basis where applicable.
'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).
40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.
QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.
Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.
Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

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

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

Method Summary

Method	Version
ASTM D7968-17M	ASTM Method D7968 - 17 Modified (Isotopic Dilution)
ASTMD7979-19M	ASTM Method D7979 - 19 Modified (Isotopic Dilution)

Parameter Summary

Parameter	Synonym	Cas #
PFBA	Perfluorobutanoic Acid	375-22-4
PFPeA	Perfluoropentanoic Acid	2706-90-3
4:2 FTSA	4:2 Fluorotelomer Sulfonic Acid	757124-72-4
PFHxA	Perfluorohexanoic Acid	307-24-4
PFBS	Perfluorobutane sulfonic Acid	375-73-5
PFHpA	Perfluoroheptanoic Acid	375-85-9
PFPeS	Perfluoropentane Sulfonic Acid	2706-91-4
6:2 FTSA	6:2 Fluorotelomer Sulfonic Acid	27619-97-2
PFOA	Perfluorooctanoic Acid	335-67-1
PFHxS	Perfluorohexane Sulfonic Acid	355-46-4
PFHxS-LN	Perfluorohexane Sulfonic Acid - LN	355-46-4-LN
PFHxS-BR	Perfluorohexane Sulfonic Acid - BR	355-46-4-BR
PFNA	Perfluorononanoic Acid	375-95-1
8:2 FTSA	8:2 Fluorotelomer Sulfonic Acid	39108-34-4
PFHpS	Perfluoroheptane Sulfonic Acid	375-92-8
PFDA	Perfluorodecanoic Acid	335-76-2
N-MeFOSAA	N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9
EtFOSAA	N-Ethyl Perfluorooctane Sulfonamidoacetic Acid	2991-50-6
PFOS	Perfluorooctane Sulfonic Acid	1763-23-1
PFOS-LN	Perfluorooctane Sulfonic Acid - LN	1763-23-1-LN
PFOS-BR	Perfluorooctane Sulfonic Acid - BR	1763-23-1-BR
PFUnDA	Perfluoroundecanoic Acid	2058-94-8
PFNS	Perfluorononane Sulfonic Acid	68259-12-1
PFDoDA	Perfluorododecanoic Acid	307-55-1
PFDS	Perfluorodecane Sulfonic Acid	335-77-3
PFTrDA	Perfluorotridecanoic Acid	72629-94-8
FOSA	Perfluorooctane Sulfonamide	754-91-6
PFTeDA	Perfluorotetradecanoic Acid	376-06-7
11Cl-PF3OUdS	11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	763051-92-9
9Cl-PF3ONS	9-chlorohexadecafluoro-3-oxanone1-sulfonic acid	756426-58-1
ADONA	4,8-dioxa-3H-perfluorononanoic acid	919005-14-4
HFPO-DA	Hexafluoropropylene oxide dimer	13252-13-6

Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S17767.01	Plant 2 Vault_NAPL	Oil	09/21/20 12:00
S17767.02	Plant 2 Vault_Water	Liquid	09/21/20 12:00

Analytical Laboratory Report

Lab Sample ID: S17767.01
Sample Tag: Plant 2 Vault_NAPL
Collected Date/Time: 09/21/2020 12:00
Matrix: Oil
COC Reference: 127173

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.9	IR
1	32oz Glass	None	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	6.893/6.701/10	ASTM D7968-17M	10/02/20 15:00	KCV	

Organics

28 PFAs, Method: ASTM D7968-17M, Run Date: 10/05/20 18:47, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
PFBA*	Not detected	1,000		ng/kg	52.1	375-22-4	1	
PFPeA*	Not detected	520		ng/kg	52.1	2706-90-3	1	
4:2 FTSA*	Not detected	520		ng/kg	52.1	757124-72-4	1	
PFHxA*	Not detected	520		ng/kg	52.1	307-24-4	1	
PFBS*	Not detected	520		ng/kg	52.1	375-73-5	1	
PFHpA*	Not detected	520		ng/kg	52.1	375-85-9	1	
PFPeS*	Not detected	520		ng/kg	52.1	2706-91-4	1	
6:2 FTSA*	Not detected	520		ng/kg	52.1	27619-97-2	I1	
PFOA*	Not detected	520		ng/kg	52.1	335-67-1	1	
PFHxS*	Not detected	520		ng/kg	52.1	355-46-4	1	
PFHxS-LN*	Not detected	520		ng/kg	52.1	355-46-4-LN	1	
PFHxS-BR*	Not detected	520		ng/kg	52.1	355-46-4-BR	1	
PFNA*	Not detected	520		ng/kg	52.1	375-95-1	1	
8:2 FTSA*	Not detected	520		ng/kg	52.1	39108-34-4	I1	
PFHpS*	Not detected	520		ng/kg	52.1	375-92-8	1	
PFDA*	Not detected	520		ng/kg	52.1	335-76-2	1	
N-MeFOSAA*	Not detected	520		ng/kg	52.1	2355-31-9	1	
EtFOSAA*	Not detected	520		ng/kg	52.1	2991-50-6	I1	
PFOS*	Not detected	520		ng/kg	52.1	1763-23-1	1	
PFOS-LN*	Not detected	520		ng/kg	52.1	1763-23-1-LN	1	
PFOS-BR*	Not detected	520		ng/kg	52.1	1763-23-1-BR	1	
PFUnDA*	Not detected	520		ng/kg	52.1	2058-94-8	1	
PFNS*	Not detected	520		ng/kg	52.1	68259-12-1	1	
PFDoDA*	Not detected	520		ng/kg	52.1	307-55-1	1	
PFDS*	Not detected	520		ng/kg	52.1	335-77-3	1	
PFTrDA*	Not detected	520		ng/kg	52.1	72629-94-8	1	
FOSA*	Not detected	520		ng/kg	52.1	754-91-6	I1	
PFTeDA*	Not detected	520		ng/kg	52.1	376-06-7	1	
11Cl-PF3OUdS*	Not detected	520		ng/kg	52.1	763051-92-9	1	
9Cl-PF3ONS*	Not detected	520		ng/kg	52.1	756426-58-1	1	
ADONA*	Not detected	520		ng/kg	52.1	919005-14-4	1	
HFPO-DA*	Not detected	520		ng/kg	52.1	13252-13-6	1	

1-Bottles not provided per method. Sample poured off to analyze.
I-Matrix interference with internal standard

Analytical Laboratory Report

Lab Sample ID: S17767.02
Sample Tag: Plant 2 Vault_Water
Collected Date/Time: 09/21/2020 12:00
Matrix: Liquid
COC Reference: 127173

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	15ml Centrifuge Tube	None	Yes	4.9	IR
1	32oz Glass	None	Yes	4.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Initial wt. (g) / Final wt. (g) / Volume (ml)*	11.94/6.93/10	ASTMD7979-19M	09/29/20 16:00	KCV	

Organics

28 PFAs, Method: ASTMD7979-19M, Run Date: 10/01/20 11:15, Analyst: KCV

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
PFBA*	Not detected	20		ng/L	2	375-22-4	1	
PFPeA*	13	10		ng/L	2	2706-90-3	1	
4:2 FTSA*	Not detected	10		ng/L	2	757124-72-4	1	
PFHxA*	17	10		ng/L	2	307-24-4	1	
PFBS*	Not detected	10		ng/L	2	375-73-5	1	
PFHpA*	16	10		ng/L	2	375-85-9	1	
PFPeS*	Not detected	10		ng/L	2	2706-91-4	1	
6:2 FTSA*	Not detected	10		ng/L	2	27619-97-2	1	
PFOA*	45	10		ng/L	2	335-67-1	1	
PFHxS*	Not detected	10		ng/L	2	355-46-4	1	
PFHxS-LN*	Not detected	10		ng/L	2	355-46-4-LN	1	
PFHxS-BR*	Not detected	10		ng/L	2	355-46-4-BR	1	
PFNA*	Not detected	10		ng/L	2	375-95-1	1	
8:2 FTSA*	Not detected	10		ng/L	2	39108-34-4	1	
PFHpS*	Not detected	10		ng/L	2	375-92-8	1	
PFDA*	16	10		ng/L	2	335-76-2	1	
N-MeFOSAA*	Not detected	10		ng/L	2	2355-31-9	1	
EtFOSAA*	Not detected	10		ng/L	2	2991-50-6	1	
PFOS*	40	10		ng/L	2	1763-23-1	1	
PFOS-LN*	27	10		ng/L	2	1763-23-1-LN	1	
PFOS-BR*	11	10		ng/L	2	1763-23-1-BR	1	
PFUnDA*	Not detected	10		ng/L	2	2058-94-8	1	
PFNS*	Not detected	10		ng/L	2	68259-12-1	1	
PFDoDA*	Not detected	10		ng/L	2	307-55-1	1	
PFDS*	Not detected	10		ng/L	2	335-77-3	1	
PFTrDA*	Not detected	10		ng/L	2	72629-94-8	1	
FOSA*	Not detected	10		ng/L	2	754-91-6	1	
PFTeDA*	Not detected	10		ng/L	2	376-06-7	1	
11Cl-PF3OUdS*	Not detected	10		ng/L	2	763051-92-9	1	
9Cl-PF3ONS*	Not detected	10		ng/L	2	756426-58-1	1	
ADONA*	Not detected	10		ng/L	2	919005-14-4	1	
HFPO-DA*	Not detected	10		ng/L	2	13252-13-6	1	

1-Bottles not provided per method. Sample poured off to analyze.

Quality Control Report

Report ID: S17767.01(01)+QC01
Generated on 10/12/2020

Report to

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

Phone: 248-994-2272 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Report Summary

Lab Sample ID(s): S17767.01-S17767.02
Project: RACER Lansing
Submitted Date/Time: 09/21/2020 16:15
Sampled by: M. Samp / E. Feenstra
P.O. #: 30042872.00102

QC Report Sections

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

Barbara Ball
Quality Assurance Manager

Lab Sample ID: S17767.01
Sample Tag: Plant 2 Vault_NAPL
Collected Date/Time: 09/21/2020 12:00
Matrix: Oil
COC Reference: 127173

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTM D7968-17M	10/05/20 18:47	AK201005	PF201002S1	Yes	BLK/LCS/LCSD/MS/DU

Lab Sample ID: S17767.02

Sample Tag: Plant 2 Vault_Water

Collected Date/Time: 09/21/2020 12:00

Matrix: Liquid

COC Reference: 127173

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
28 PFAs	ASTMD7979-19M	10/01/20 11:15	AK200930B	PF200929W2	Yes	BLK/LCS/LCSD/MS/DU

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: PF200929W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17767.02	28 PFAs	ASTMD7979-19M	10/01/20 11:15	AK200930B

Organics - Volatiles, Prep Batch ID: PF201002S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S17767.01	28 PFAs	ASTM D7968-17M	10/05/20 18:47	AK201005

Organics - Volatiles, Prep Batch ID: PF200929W2

QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: AK200929B.BLK200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:39, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: AK200929B.LCS200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:00, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200929B.LCSD200929B, Parent Sample ID: AK200929B.LCS200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:19, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: AK200929B.1774802M, Parent Sample ID: S17748.02

Run in Batch: AK200929B, Run Date: 09/30/2020 05:37, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1.95

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Duplicate (DUP)

Lab Sample ID: AK200929B.1779201D, Parent Sample ID: S17792.01

Run in Batch: AK200929B, Run Date: 09/30/2020 06:36, Prep Date: 09/29/2020, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: PF201002S1

QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: AK201002S.BLK201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:56, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: AK201002S.LCS201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:17, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201002S.LCSD201002, Parent Sample ID: AK201002S.LCS201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:36, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Matrix Spike (MS)

Lab Sample ID: AK201002S.1785118M, Parent Sample ID: S17851.18

Run in Batch: AK201002S, Run Date: 10/02/2020 22:35, Prep Date: 10/02/2020, Matrix: SO, Dilution: 8.81

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

Duplicate (DUP)

Lab Sample ID: AK201002S.1785119D, Parent Sample ID: S17851.19

Run in Batch: AK201002S, Run Date: 10/02/2020 23:14, Prep Date: 10/02/2020, Matrix: SO, Dilution: 10.1

Surrogate	Flags	%Rec	LCL	UCL

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S17767.01

Sample Tag: Plant 2 Vault_NAPL

Collected Date/Time: 09/21/2020 12:00

Matrix: Oil

COC Reference: 127173

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK201005, Run Date: 10/05/2020 18:47, Matrix: SO, Dilution: 52.1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**124.9**	50.0	150.0
M2-6:2FTSA	*	**226.6**	50.0	150.0
M2-8:2FTSA	*	**343.8**	50.0	150.0
M2PFTeDA		**129.3**	12.0	218.0
M3PFBS		**108.8**	50.0	150.0
M3PFHxS		**103.6**	50.0	150.0
M4PFHpA		**108.5**	50.0	150.0
M5PFHxA		**111.8**	50.0	150.0
M5PFPeA		**106.5**	50.0	150.0
M6PFDA		**118.4**	50.0	150.0
M7PFUnDA		**131.2**	50.0	150.0
M8FOSA	*	**156.0**	50.0	150.0
M8PFOA		**118.4**	50.0	150.0
M8PFOS		**99.8**	50.0	150.0
M9-PFNA		**113.3**	50.0	150.0
MPFBA		**105.9**	50.0	150.0
MPFDoDA		**112.0**	50.0	150.0
d3N-MeFOSAA		**146.1**	50.0	150.0
d5EtFOSAA	*	**161.1**	50.0	150.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S17767.02

Sample Tag: Plant 2 Vault_Water

Collected Date/Time: 09/21/2020 12:00

Matrix: Liquid

COC Reference: 127173

Organics - Volatiles, Analysis: 28 PFAs

Run in Batch: AK200930B, Run Date: 10/01/2020 11:15, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**140.3**	50.0	150.0
M2-6:2FTSA		**142.1**	50.0	150.0
M2-8:2FTSA		**131.7**	50.0	150.0
M2PFTeDA		**149.7**	12.0	218.0
M3PFBS		**93.7**	50.0	150.0
M3PFHxS		**94.6**	50.0	150.0
M4PFHpA		**97.9**	50.0	150.0
M5PFHxA		**96.1**	50.0	150.0
M5PFPeA		**104.7**	50.0	150.0
M6PFDA		**105.4**	50.0	150.0
M7PFUnDA		**120.3**	50.0	150.0
M8FOSA		**105.2**	50.0	150.0
M8PFOA		**99.0**	50.0	150.0
M8PFOS		**99.3**	50.0	150.0
M9-PFNA		**109.6**	50.0	150.0
MPFBA		**105.1**	50.0	150.0
MPFDoDA		**108.8**	50.0	150.0
d3N-MeFOSAA		**123.6**	50.0	150.0
d5EtFOSAA		**111.9**	50.0	150.0

Organics - Volatiles, Prep Batch ID: PF200929W2

QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: AK200929B.BLK200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:39, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**107.2**	50.0	150.0
M2-6:2FTSA		**90.1**	50.0	150.0
M2-8:2FTSA		**112.6**	50.0	150.0
M2PFTeDA		**133.2**	12.0	218.0
M3PFBS		**97.5**	50.0	150.0
M3PFHxS		**101.8**	50.0	150.0
M4PFHpA		**97.8**	50.0	150.0
M5PFHxA		**103.7**	50.0	150.0
M5PFPeA		**104.1**	50.0	150.0
M6PFDA		**95.7**	50.0	150.0
M7PFUnDA		**109.1**	50.0	150.0
M8FOSA		**108.1**	50.0	150.0
M8PFOA		**99.7**	50.0	150.0
M8PFOS		**91.3**	50.0	150.0
M9-PFNA		**98.4**	50.0	150.0
MPFBA		**101.9**	50.0	150.0
MPFDoDA		**112.6**	50.0	150.0
d3N-MeFOSAA		**95.2**	50.0	150.0
d5EtFOSAA		**103.7**	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK200929B.LCS200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:00, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**105.1**	50.0	150.0
M2-6:2FTSA		**100.9**	50.0	150.0
M2-8:2FTSA		**125.4**	50.0	150.0
M2PFTeDA		**142.0**	12.0	218.0
M3PFBS		**101.3**	50.0	150.0
M3PFHxS		**101.2**	50.0	150.0
M4PFHpA		**105.6**	50.0	150.0
M5PFHxA		**104.7**	50.0	150.0
M5PFPeA		**106.4**	50.0	150.0
M6PFDA		**105.3**	50.0	150.0
M7PFUnDA		**102.2**	50.0	150.0
M8FOSA		**108.1**	50.0	150.0
M8PFOA		**102.7**	50.0	150.0
M8PFOS		**92.6**	50.0	150.0
M9-PFNA		**96.3**	50.0	150.0
MPFBA		**104.2**	50.0	150.0
MPFDoDA		**110.3**	50.0	150.0
d3N-MeFOSAA		**92.5**	50.0	150.0
d5EtFOSAA		**105.6**	50.0	150.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200929B.LCSD200929B, Parent Sample ID: AK200929B.LCS200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:19, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**106.2**	50.0	150.0
M2-6:2FTSA		**84.2**	50.0	150.0
M2-8:2FTSA		**97.4**	50.0	150.0
M2PFTeDA		**119.7**	12.0	218.0
M3PFBS		**90.4**	50.0	150.0
M3PFHxS		**87.9**	50.0	150.0
M4PFHpA		**88.8**	50.0	150.0
M5PFHxA		**98.1**	50.0	150.0
M5PFPeA		**96.6**	50.0	150.0
M6PFDA		**99.7**	50.0	150.0
M7PFUnDA		**94.6**	50.0	150.0
M8FOSA		**103.2**	50.0	150.0
M8PFOA		**96.4**	50.0	150.0
M8PFOS		**93.0**	50.0	150.0
M9-PFNA		**92.8**	50.0	150.0
MPFBA		**95.3**	50.0	150.0
MPFDoDA		**107.2**	50.0	150.0
d3N-MeFOSAA		**113.1**	50.0	150.0
d5EtFOSAA		**97.0**	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK200929B.1774802M, Parent Sample ID: S17748.02

Run in Batch: AK200929B, Run Date: 09/30/2020 05:37, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1.95

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**103.1**	50.0	150.0
M2-6:2FTSA		**93.8**	50.0	150.0
M2-8:2FTSA		**110.2**	50.0	150.0
M2PFTeDA		**164.2**	12.0	218.0
M3PFBS		**103.7**	50.0	150.0
M3PFHxS		**99.7**	50.0	150.0
M4PFHpA		**96.7**	50.0	150.0
M5PFHxA		**107.3**	50.0	150.0
M5PFPeA		**106.3**	50.0	150.0
M6PFDA		**103.3**	50.0	150.0
M7PFUnDA		**117.2**	50.0	150.0
M8FOSA		**102.4**	50.0	150.0
M8PFOA		**102.0**	50.0	150.0
M8PFOS		**97.1**	50.0	150.0
M9-PFNA		**101.6**	50.0	150.0
MPFBA		**102.7**	50.0	150.0
MPFDoDA		**113.7**	50.0	150.0
d3N-MeFOSAA		**121.4**	50.0	150.0
d5EtFOSAA		**114.5**	50.0	150.0

Duplicate (DUP)

Lab Sample ID: AK200929B.1779201D, Parent Sample ID: S17792.01

Run in Batch: AK200929B, Run Date: 09/30/2020 06:36, Prep Date: 09/29/2020, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**106.9**	50.0	150.0
M2-6:2FTSA		**108.2**	50.0	150.0
M2-8:2FTSA		**116.0**	50.0	150.0
M2PFTeDA		**162.9**	12.0	218.0
M3PFBS		**99.8**	50.0	150.0
M3PFHxS		**96.8**	50.0	150.0
M4PFHpA		**107.5**	50.0	150.0
M5PFHxA		**104.5**	50.0	150.0
M5PFPeA		**107.7**	50.0	150.0
M6PFDA		**108.7**	50.0	150.0
M7PFUnDA		**101.4**	50.0	150.0
M8FOSA		**111.8**	50.0	150.0
M8PFOA		**98.1**	50.0	150.0
M8PFOS		**101.8**	50.0	150.0
M9-PFNA		**102.1**	50.0	150.0
MPFBA		**106.7**	50.0	150.0
MPFDoDA		**120.4**	50.0	150.0
d3N-MeFOSAA		**102.2**	50.0	150.0
d5EtFOSAA		**106.9**	50.0	150.0

Organics - Volatiles, Prep Batch ID: PF201002S1

QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: AK201002S.BLK201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:56, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**105.9**	50.0	150.0
M2-6:2FTSA		**99.2**	50.0	150.0
M2-8:2FTSA		**105.5**	50.0	150.0
M2PFTeDA		**120.3**	12.0	218.0
M3PFBS		**110.5**	50.0	150.0
M3PFHxS		**105.2**	50.0	150.0
M4PFHpA		**98.8**	50.0	150.0
M5PFHxA		**101.5**	50.0	150.0
M5PFPeA		**102.5**	50.0	150.0
M6PFDA		**105.1**	50.0	150.0
M7PFUnDA		**105.1**	50.0	150.0
M8FOSA		**90.4**	50.0	150.0
M8PFOA		**105.7**	50.0	150.0
M8PFOS		**102.0**	50.0	150.0
M9-PFNA		**108.7**	50.0	150.0
MPFBA		**100.8**	50.0	150.0
MPFDoDA		**115.7**	50.0	150.0
d3N-MeFOSAA		**108.9**	50.0	150.0
d5EtFOSAA		**109.6**	50.0	150.0

Laboratory Control Sample (LCS)

Lab Sample ID: AK201002S.LCS201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:17, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**92.1**	50.0	150.0
M2-6:2FTSA		**96.3**	50.0	150.0
M2-8:2FTSA		**107.1**	50.0	150.0
M2PFTeDA		**93.7**	12.0	218.0
M3PFBS		**102.0**	50.0	150.0
M3PFHxS		**96.7**	50.0	150.0
M4PFHpA		**102.4**	50.0	150.0
M5PFHxA		**92.6**	50.0	150.0
M5PFPeA		**94.3**	50.0	150.0
M6PFDA		**104.2**	50.0	150.0
M7PFUnDA		**91.4**	50.0	150.0
M8FOSA		**90.4**	50.0	150.0
M8PFOA		**97.6**	50.0	150.0
M8PFOS		**96.7**	50.0	150.0
M9-PFNA		**101.3**	50.0	150.0
MPFBA		**94.8**	50.0	150.0
MPFDoDA		**102.8**	50.0	150.0
d3N-MeFOSAA		**127.2**	50.0	150.0
d5EtFOSAA		**98.5**	50.0	150.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201002S.LCSD201002, Parent Sample ID: AK201002S.LCS201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:36, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**89.3**	50.0	150.0
M2-6:2FTSA		**96.6**	50.0	150.0
M2-8:2FTSA		**117.7**	50.0	150.0
M2PFTeDA		**131.1**	12.0	218.0
M3PFBS		**102.6**	50.0	150.0
M3PFHxS		**104.6**	50.0	150.0
M4PFHpA		**94.7**	50.0	150.0
M5PFHxA		**96.5**	50.0	150.0
M5PFPeA		**98.7**	50.0	150.0
M6PFDA		**98.5**	50.0	150.0
M7PFUnDA		**98.6**	50.0	150.0
M8FOSA		**92.7**	50.0	150.0
M8PFOA		**99.0**	50.0	150.0
M8PFOS		**88.9**	50.0	150.0
M9-PFNA		**100.2**	50.0	150.0
MPFBA		**94.9**	50.0	150.0
MPFDoDA		**110.8**	50.0	150.0
d3N-MeFOSAA		**121.4**	50.0	150.0
d5EtFOSAA		**104.4**	50.0	150.0

Matrix Spike (MS)

Lab Sample ID: AK201002S.1785118M, Parent Sample ID: S17851.18

Run in Batch: AK201002S, Run Date: 10/02/2020 22:35, Prep Date: 10/02/2020, Matrix: SO, Dilution: 8.81

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**95.8**	50.0	150.0
M2-6:2FTSA		**85.7**	50.0	150.0
M2-8:2FTSA		**100.7**	50.0	150.0
M2PFTeDA		**112.5**	12.0	218.0
M3PFBS		**102.9**	50.0	150.0
M3PFHxS		**97.3**	50.0	150.0
M4PFHpA		**90.5**	50.0	150.0
M5PFHxA		**93.9**	50.0	150.0
M5PFPeA		**97.5**	50.0	150.0
M6PFDA		**85.6**	50.0	150.0
M7PFUnDA		**110.9**	50.0	150.0
M8FOSA		**89.8**	50.0	150.0
M8PFOA		**99.3**	50.0	150.0
M8PFOS		**92.2**	50.0	150.0
M9-PFNA		**101.0**	50.0	150.0
MPFBA		**95.3**	50.0	150.0
MPFDoDA		**112.1**	50.0	150.0
d3N-MeFOSAA		**108.5**	50.0	150.0
d5EtFOSAA		**102.6**	50.0	150.0

Duplicate (DUP)

Lab Sample ID: AK201002S.1785119D, Parent Sample ID: S17851.19

Run in Batch: AK201002S, Run Date: 10/02/2020 23:14, Prep Date: 10/02/2020, Matrix: SO, Dilution: 10.1

Internal Standard	Flags	%Rec	LCL	UCL
M2-4:2FTSA		**91.5**	50.0	150.0
M2-6:2FTSA		**91.1**	50.0	150.0
M2-8:2FTSA		**109.8**	50.0	150.0
M2PFTeDA		**102.0**	12.0	218.0
M3PFBS		**106.5**	50.0	150.0
M3PFHxS		**100.9**	50.0	150.0
M4PFHpA		**105.2**	50.0	150.0
M5PFHxA		**104.1**	50.0	150.0
M5PFPeA		**101.8**	50.0	150.0
M6PFDA		**88.8**	50.0	150.0
M7PFUnDA		**105.8**	50.0	150.0
M8FOSA		**91.3**	50.0	150.0
M8PFOA		**110.6**	50.0	150.0
M8PFOS		**96.1**	50.0	150.0
M9-PFNA		**120.7**	50.0	150.0
MPFBA		**99.0**	50.0	150.0
MPFDoDA		**107.4**	50.0	150.0
d3N-MeFOSAA		**114.6**	50.0	150.0
d5EtFOSAA		**105.5**	50.0	150.0

Organics - Volatiles, Prep Batch ID: PF200929W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: AK200929B.BLK200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:39, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/l
PFPeA		ND	4	ng/l
4:2 FTSA		ND	2	ng/l
PFHxA		ND	2	ng/l
PFBS		ND	2	ng/l
HFPO-DA		ND	2	ng/l
PFHpA		ND	2	ng/l
PFPeS		ND	2	ng/l
ADONA		ND	2	ng/l
6:2 FTSA		ND	2	ng/l
PFOA		ND	2	ng/l
PFHxS-BR		ND	2	ng/l
PFHxS		ND	2	ng/l
PFHxS-LN		ND	2	ng/l
PFNA		ND	2	ng/l
8:2 FTSA		ND	2	ng/l
PFHpS		ND	2	ng/l
N-MeFOSAA		ND	2	ng/l
PFDA		ND	2	ng/l
PFOS-BR		ND	2	ng/l
EtFOSAA		ND	4	ng/l
PFOS		ND	2	ng/l
PFOS-LN		ND	2	ng/l
PFUnDA		ND	2	ng/l
9CL-PF3ONS		ND	2	ng/l
PFNS		ND	2	ng/l
PFDoDA		ND	2	ng/l
PFDS		ND	2	ng/l
PFTrDA		ND	2	ng/l
11CL-PF3OUdS		ND	2	ng/l
FOSA		ND	2	ng/l
PFTeDA		ND	4	ng/l

Laboratory Control Sample (LCS)

Lab Sample ID: AK200929B.LCS200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:00, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		103.0	70.0	130.0
PFPeA		102.0	70.0	130.0
4:2 FTSA		95.7	70.0	130.0
PFHxA		97.3	70.0	130.0
PFBS		104.0	70.0	130.0
HFPO-DA		88.5	70.0	130.0
PFHpA		83.3	70.0	130.0
PFPeS		111.0	70.0	130.0
ADONA		96.9	70.0	130.0

Organics - Volatiles, Prep Batch ID: PF200929W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK200929B.LCS200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:00, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		95.9	70.0	130.0
PFOA		107.0	70.0	130.0
PFHxS		99.3	70.0	130.0
PFNA		107.0	70.0	130.0
8:2 FTSA		77.3	70.0	130.0
PFHpS		105.0	70.0	130.0
N-MeFOSAA		111.0	70.0	130.0
PFDA		98.7	70.0	130.0
EtFOSAA		82.0	70.0	130.0
PFOS		109.0	70.0	130.0
PFUnDA		98.7	70.0	130.0
9CL-PF3ONS		106.0	70.0	130.0
PFNS		104.0	70.0	130.0
PFDoDA		103.0	70.0	130.0
PFDS		111.0	70.0	130.0
PFTrDA		109.0	70.0	130.0
11CL-PF3OUdS		106.0	70.0	130.0
FOSA		105.0	70.0	130.0
PFTeDA		101.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK200929B.LCSD200929B, Parent Sample ID: AK200929B.LCS200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:19, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		113.0	70.0	130.0	9.3	30.0
PFPeA		112.0	70.0	130.0	9.3	30.0
4:2 FTSA		100.0	70.0	130.0	4.4	30.0
PFHxA		107.0	70.0	130.0	9.5	30.0
PFBS		116.0	70.0	130.0	10.9	30.0
HFPO-DA		104.0	70.0	130.0	16.1	30.0
PFHpA		107.0	70.0	130.0	24.9	30.0
PFPeS		125.0	70.0	130.0	11.9	30.0
ADONA		101.0	70.0	130.0	4.1	30.0
6:2 FTSA		117.0	70.0	130.0	19.8	30.0
PFOA		113.0	70.0	130.0	5.5	30.0
PFHxS		116.0	70.0	130.0	15.5	30.0
PFNA		113.0	70.0	130.0	5.5	30.0
8:2 FTSA		102.0	70.0	130.0	27.6	30.0
PFHpS		107.0	70.0	130.0	1.9	30.0
N-MeFOSAA		99.7	70.0	130.0	10.7	30.0
PFDA		116.0	70.0	130.0	16.1	30.0
EtFOSAA		98.8	70.0	130.0	18.6	30.0
PFOS		112.0	70.0	130.0	2.7	30.0
PFUnDA		104.0	70.0	130.0	5.2	30.0
9CL-PF3ONS		111.0	70.0	130.0	4.6	30.0
PFNS		105.0	70.0	130.0	1.0	30.0

Organics - Volatiles, Prep Batch ID: PF200929W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK200929B.LCSD200929B, Parent Sample ID: AK200929B.LCS200929B

Run in Batch: AK200929B, Run Date: 09/30/2020 04:19, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		97.3	70.0	130.0	5.7	30.0
PFDS		102.0	70.0	130.0	8.5	30.0
PFTrDA		102.0	70.0	130.0	6.6	30.0
11CL-PF3OUdS		104.0	70.0	130.0	1.9	30.0
FOSA		110.0	70.0	130.0	4.7	30.0
PFTeDA		115.0	70.0	130.0	13.0	30.0

Matrix Spike (MS)

Lab Sample ID: AK200929B.1774802M, Parent Sample ID: S17748.02

Run in Batch: AK200929B, Run Date: 09/30/2020 05:37, Prep Date: 09/29/2020, Matrix: WW, Dilution: 1.95

Analyte	Flags	% Rec	LCL	UCL
PFBA		112.8	70.0	130.0
PFPeA		102.6	70.0	130.0
4:2 FTSA		99.5	70.0	130.0
PFHxA		101.5	70.0	130.0
PFBS		102.6	70.0	130.0
PFHpA		102.6	70.0	130.0
PFPeS		112.8	70.0	130.0
6:2 FTSA		112.8	70.0	130.0
PFOA		102.6	70.0	130.0
PFHxS		98.5	70.0	130.0
PFNA		102.6	70.0	130.0
8:2 FTSA		96.4	70.0	130.0
PFHpS		102.6	70.0	130.0
PFDA		112.8	70.0	130.0
N-MeFOSAA		89.2	70.0	130.0
EtFOSAA		90.3	70.0	130.0
PFOS		112.8	70.0	130.0
PFUnDA		92.3	70.0	130.0
PFNS		100.5	70.0	130.0
PFDoDA		112.8	70.0	130.0
PFDS		102.6	70.0	130.0
PFTrDA		112.8	70.0	130.0
FOSA		112.8	70.0	130.0
PFTeDA		102.6	70.0	130.0
11CL-PF3OUdS		102.6	70.0	130.0
9CL-PF3ONS		112.8	70.0	130.0
ADONA		97.4	70.0	130.0
HFPO-DA		100.5	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK200929B.1779201D, Parent Sample ID: S17792.01

Run in Batch: AK200929B, Run Date: 09/30/2020 06:36, Prep Date: 09/29/2020, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

Organics - Volatiles, Prep Batch ID: PF200929W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Duplicate (DUP) (continued)

Lab Sample ID: AK200929B.1779201D, Parent Sample ID: S17792.01

Run in Batch: AK200929B, Run Date: 09/30/2020 06:36, Prep Date: 09/29/2020, Matrix: WW, Dilution: 2

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		NC	30.0
PFBS		NC	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

Organics - Volatiles, Prep Batch ID: PF201002S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Blank (BLK)

Lab Sample ID: AK201002S.BLK201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:56, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
PFBA		ND	10	ng/kg
PFPeA		ND	4	ng/kg
4:2 FTSA		ND	2	ng/kg
PFHxA		ND	2	ng/kg
PFBS		ND	2	ng/kg
HFPO-DA		ND	2	ng/kg
PFHpA		ND	2	ng/kg
PFPeS		ND	2	ng/kg
ADONA		ND	2	ng/kg
6:2 FTSA		ND	2	ng/kg
PFOA		ND	2	ng/kg
PFHxS-BR		ND	2	ng/kg
PFHxS		ND	2	ng/kg
PFHxS-LN		ND	2	ng/kg
PFNA		ND	2	ng/kg
8:2 FTSA		ND	2	ng/kg
PFHpS		ND	2	ng/kg
N-MeFOSAA		ND	2	ng/kg
PFDA		ND	2	ng/kg
PFOS-BR		ND	2	ng/kg
PFOS		ND	2	ng/kg
EtFOSAA		ND	4	ng/kg
PFOS-LN		ND	2	ng/kg
PFUnDA		ND	2	ng/kg
9CL-PF3ONS		ND	2	ng/kg
PFNS		ND	2	ng/kg
PFDoDA		ND	2	ng/kg
PFDS		ND	2	ng/kg
PFTrDA		ND	2	ng/kg
11CL-PF3OUdS		ND	2	ng/kg
FOSA		ND	2	ng/kg
PFTeDA		ND	4	ng/kg

Laboratory Control Sample (LCS)

Lab Sample ID: AK201002S.LCS201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:17, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
PFBA		109.0	70.0	130.0
PFPeA		111.0	70.0	130.0
4:2 FTSA		102.0	70.0	130.0
PFHxA		105.0	70.0	130.0
PFBS		104.0	70.0	130.0
HFPO-DA		79.4	70.0	130.0
PFHpA		87.3	70.0	130.0
PFPeS		113.0	70.0	130.0
ADONA		95.4	70.0	130.0

Organics - Volatiles, Prep Batch ID: PF201002S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: AK201002S.LCS201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:17, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
6:2 FTSA		115.0	70.0	130.0
PFOA		118.0	70.0	130.0
PFHxS		111.0	70.0	130.0
PFNA		109.0	70.0	130.0
8:2 FTSA		92.0	70.0	130.0
PFHpS		104.0	70.0	130.0
N-MeFOSAA		111.0	70.0	130.0
PFDA		99.5	70.0	130.0
PFOS		105.0	70.0	130.0
EtFOSAA		104.0	70.0	130.0
PFUnDA		106.0	70.0	130.0
9CL-PF3ONS		104.0	70.0	130.0
PFNS		100.0	70.0	130.0
PFDoDA		104.0	70.0	130.0
PFDS		93.9	70.0	130.0
PFTrDA		111.0	70.0	130.0
11CL-PF3OUdS		97.4	70.0	130.0
FOSA		107.0	70.0	130.0
PFTeDA		119.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: AK201002S.LCSD201002, Parent Sample ID: AK201002S.LCS201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:36, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFBA		111.0	70.0	130.0	1.8	30.0
PFPeA		106.0	70.0	130.0	4.6	30.0
4:2 FTSA		102.0	70.0	130.0	0.0	30.0
PFHxA		101.0	70.0	130.0	3.9	30.0
PFBS		104.0	70.0	130.0	0.0	30.0
HFPO-DA		95.2	70.0	130.0	18.1	30.0
PFHpA		99.8	70.0	130.0	13.4	30.0
PFPeS		110.0	70.0	130.0	2.7	30.0
ADONA		101.0	70.0	130.0	5.7	30.0
6:2 FTSA		107.0	70.0	130.0	7.2	30.0
PFOA		111.0	70.0	130.0	6.1	30.0
PFHxS		100.0	70.0	130.0	10.4	30.0
PFNA		106.0	70.0	130.0	2.8	30.0
8:2 FTSA		84.4	70.0	130.0	8.6	30.0
PFHpS		89.7	70.0	130.0	14.8	30.0
N-MeFOSAA		105.0	70.0	130.0	5.6	30.0
PFDA		101.0	70.0	130.0	1.5	30.0
PFOS		114.0	70.0	130.0	8.2	30.0
EtFOSAA		99.2	70.0	130.0	4.7	30.0
PFUnDA		112.0	70.0	130.0	5.5	30.0
9CL-PF3ONS		108.0	70.0	130.0	3.8	30.0
PFNS		110.0	70.0	130.0	9.5	30.0

Organics - Volatiles, Prep Batch ID: PF201002S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: AK201002S.LCSD201002, Parent Sample ID: AK201002S.LCS201002

Run in Batch: AK201002S, Run Date: 10/02/2020 21:36, Prep Date: 10/02/2020, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
PFDoDA		102.0	70.0	130.0	1.9	30.0
PFDS		106.0	70.0	130.0	12.1	30.0
PFTrDA		118.0	70.0	130.0	6.1	30.0
11CL-PF3OUdS		115.0	70.0	130.0	16.6	30.0
FOSA		104.0	70.0	130.0	2.8	30.0
PFTeDA		111.0	70.0	130.0	7.0	30.0

Matrix Spike (MS)

Lab Sample ID: AK201002S.1785118M, Parent Sample ID: S17851.18

Run in Batch: AK201002S, Run Date: 10/02/2020 22:35, Prep Date: 10/02/2020, Matrix: SO, Dilution: 8.81

Analyte	Flags	% Rec	LCL	UCL
PFBA		115.6	70.0	130.0
PFPeA		122.4	70.0	130.0
4:2 FTSA		99.8	70.0	130.0
PFHxA		99.8	70.0	130.0
PFBS		113.4	70.0	130.0
PFHpA		124.7	70.0	130.0
PFPeS		117.9	70.0	130.0
6:2 FTSA		127.0	70.0	130.0
PFOA		120.2	70.0	130.0
PFHxS	*	136.1	70.0	130.0
PFNA		111.1	70.0	130.0
8:2 FTSA		99.8	70.0	130.0
PFHpS		113.4	70.0	130.0
PFDA		127.0	70.0	130.0
N-MeFOSAA		104.3	70.0	130.0
EtFOSAA		102.0	70.0	130.0
PFOS		74.8	70.0	130.0
PFUnDA		93.0	70.0	130.0
PFNS		111.1	70.0	130.0
PFDoDA		108.8	70.0	130.0
PFDS		99.8	70.0	130.0
PFTrDA		97.5	70.0	130.0
FOSA		113.4	70.0	130.0
PFTeDA		115.6	70.0	130.0
11CL-PF3OUdS		108.8	70.0	130.0
9CL-PF3ONS		106.6	70.0	130.0
ADONA		93.0	70.0	130.0
HFPO-DA		102.0	70.0	130.0

Duplicate (DUP)

Lab Sample ID: AK201002S.1785119D, Parent Sample ID: S17851.19

Run in Batch: AK201002S, Run Date: 10/02/2020 23:14, Prep Date: 10/02/2020, Matrix: SO, Dilution: 10.1

Analyte	Flags	RPD	RPD CL
PFBA		NC	30.0
PFPeA		NC	30.0

Organics - Volatiles, Prep Batch ID: PF201002S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/DUP

Duplicate (DUP) (continued)

Lab Sample ID: AK201002S.1785119D, Parent Sample ID: S17851.19

Run in Batch: AK201002S, Run Date: 10/02/2020 23:14, Prep Date: 10/02/2020, Matrix: SO, Dilution: 10.1

Analyte	Flags	RPD	RPD CL
4:2 FTSA		NC	30.0
PFHxA		8.7	30.0
PFBS		0.0	30.0
PFHpA		NC	30.0
PFPeS		NC	30.0
6:2 FTSA		NC	30.0
PFOA		NC	30.0
PFHxS		NC	30.0
PFHxS-LN		NC	30.0
PFHxS-BR		NC	30.0
PFNA		NC	30.0
8:2 FTSA		NC	30.0
PFHpS		NC	30.0
PFDA		NC	30.0
N-MeFOSAA		NC	30.0
EtFOSAA		NC	30.0
PFOS		NC	30.0
PFOS-LN		NC	30.0
PFOS-BR		NC	30.0
PFUnDA		NC	30.0
PFNS		NC	30.0
PFDoDA		NC	30.0
PFDS		NC	30.0
PFTrDA		NC	30.0
FOSA		NC	30.0
PFTeDA		NC	30.0
11CL-PF3OUdS		NC	30.0
9CL-PF3ONS		NC	30.0
ADONA		NC	30.0
HFPO-DA		NC	30.0

Merit Laboratories Login Checklist

Lab Set ID: S17767
Client: ARCADIS_NOVI (ARCADIS U.S., Inc.)
Project: RACER Lansing
Submitted: 09/21/2020 16:15 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.	[X] Yes	[ ] No	[ ] N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.9
02.	[X] Yes	[ ] No	[ ] N/A	Received on ice/ cooling process begun	
03.	[ ] Yes	[X] No	[ ] N/A	Samples shipped	
04.	[ ] Yes	[X] No	[ ] N/A	Samples left in 24 hr. drop box	
05.	[ ] Yes	[ ] No	[X] N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody					
06.	[X] Yes	[ ] No	[ ] N/A	COC adequately filled out	
07.	[X] Yes	[ ] No	[ ] N/A	COC signed and relinquished to the lab	
08.	[X] Yes	[ ] No	[ ] N/A	Sample tag on bottles match COC	
09.	[ ] Yes	[X] No	[ ] N/A	Subcontracting needed? Subcontacted to:	
Preservation					
10.	[X] Yes	[ ] No	[ ] N/A	Do sample have correct chemical preservation	
11.	[ ] Yes	[ ] No	[X] N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	[ ] Yes	[X] No	[ ] N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions					
13.	[X] Yes	[ ] No	[ ] N/A	All bottles intact	
14.	[ ] Yes	[X] No	[ ] N/A	Appropriate analytical bottles are used	
15.	[X] Yes	[ ] No	[ ] N/A	Merit bottles used	
16.	[X] Yes	[ ] No	[ ] N/A	Sufficient sample volume received	
17.	[ ] Yes	[X] No	[ ] N/A	Samples require laboratory filtration	
18.	[X] Yes	[ ] No	[ ] N/A	Samples submitted within holding time	
19.	[ ] Yes	[ ] No	[X] 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: _____

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

C.O.C. PAGE # 1 OF 1

127173

CHAIN OF CUSTODY RECORD

REPORT TO

CONTACT NAME: Tiffany Linder
COMPANY: Arcadis of Michigan, LLC
ADDRESS: 28550 Cabot Dr Ste 500
CITY: Novi | STATE: MI | ZIP CODE: 48377
PHONE NO.: 810-225-1928 | FAX NO.: | P.O. NO.: 30048872.00102
E-MAIL ADDRESS: Tiffany.Linder@arcadis.com | QUOTE NO.:

INVOICE TO

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

PROJECT NO./NAME: RACER Lansing
SAMPLER(S) - PLEASE PRINT/SIGN NAME: M. Samp, E Feenstra

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☑ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☒ EDD ☐ OTHER

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications: ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES

Project Locations: ☐ Detroit ☐ New York ☐ Other

Special Instructions

MERIT LAB NO. (FOR LAB USE ONLY)	YEAR DATE	YEAR TIME	SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives: NONE	HCl	HNO_3	H_2SO_4	NaOH	MeOH	OTHER	% VOCs soil	TCLP SVOCs	TCLP Metals	pH	Flashpoint	PCBs	Special Instructions
176115.01	09/21/2020	1200	Plant 2 Vault_NAPL	O	1	1							X	X	X	X	X	X	17767.01 (PFAS)
.02	09/21/2020	1200	Plant 2 Vault_Water	L	6	3	3						X	X	X	X	X	X	.02

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
Marinel R Samp / Arcadis ☑ Sampler	09/21/2020	1615
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
[signature]	9/21/20	1615
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 4.9

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

Rev. 5.18.12