MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Mike Jury, Project Manager, Saginaw Bay District Office
Remediation and Redevelopment Division

FROM: Jeff Pincumbe, Geologist, Geological Services Unit
Program Support Section, Remediation and Redevelopment Division

DATE: January 5, 2017

SUBJECT: Wurtsmith-Loud Drive, Iosco County, Site ID #35000152
Site Investigation

This report is for Part 201 site investigation work requested by the Department of Environmental Quality (DEQ), Remediation and Redevelopment Division's (RRD's), Saginaw Bay District office for the subject site (Fig 1). The Loud Drive site is one of three sites associated with Wurtsmith Air Force Base that have been or have the potential to be impacted with Perfluorinated Hydrocarbons (PFCs). The other two sites associated with Wurtsmith are the F-41/Colbath Road site and the River Road Site (Fig 1). PFCs are used in firefighting foam which was used on several occasions at the air force base and suspected of being used on several structure fires in the surrounding area of the base.

The Loud Drive site is located between Van Etten Lake to the west and Lake Huron to the east. This is a residential area where the majority of homes use private wells for their water supply. Ongoing environmental work associated with the air force base has determined that PFCs are migrating towards, and have impacted, Van Etten Lake. The purpose for the investigation along Loud Drive was to determine if PFCs had migrated beneath Van Etten Lake and impacted residential wells in this area. The investigation was also conducted to determine if PFCs were discharged into Lake Huron at this location and to determine the depth to an underlying confining layer (clay or silt).

The PFCs includes a list of 21 compounds with only two being compounds of concern: Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA). The action level for the compounds of concern is 70 parts per trillion for each compound or for a total of the two compounds added together.

This report includes the following:

- Site Location Map (Fig 1)
- Site Map (Fig 2)
- Global Position System (GPS) Coordinates of Borings (Table 1)
- Elevation Data (Table 2)
- Volatile Organic Compounds Laboratory Tables with Comparison to Risk-Based Screening Levels (RBSLs) (Table 3)
- 1,4-Dioxane Laboratory Tables with comparison to RBSLs (Table 4)
- PFC Compounds of Concern Laboratory Tables with Comparison to Action Levels (Table 5)
- DEQ Soil Boring and Monitor Well Logs (Appendix A)
- DEQ Laboratory Results (Appendix B)
- Test America Laboratory Results (Appendix C)

Beginning on October 17, 2016, RRD's Geological Services Unit (GSU) completed soil borings (LD B-1 through LD B-8) and installed monitor wells (LD MW-1, LD MW-3, LD MW-4, and LD MW-5) at the locations shown on Figure 2. The GPS coordinates for each location are included on Table 1. Soil boring logs and monitor well logs are included in Appendix A. The soil boring and monitor wells were completed using a Geoprobe. Soil samples were collected at each location using a dual tube system with a 3.25-inch outer rod. Soil samples were collected from the surface until groundwater was encountered. The soil samples were for determining lithology. There were no soil samples submitted for laboratory analyses.

Once groundwater was encountered, the rods were removed and a solid point was attached to the lead rod. The 3.25-inch rods were then driven as deep as possible in an attempt to identify an underlying confining layer. Due to the nature of the upper sand formation (very compact sand) it was difficult to drive the 3.25-inch rods to the desired depth. The GSU crew was unable to drive the rod more than 20 to 30 feet at most locations. At locations LD B-7 and LD B-8 it was possible to drive the 3.25-inch rods deeper. The rods were driven to 48 feet at LD B-7 and 51 feet at LD B-8.

When total depth for all soil borings and monitor wells was reached, GSU staff ran a gamma log to identify any changes in lithology with depth. The gamma logs are included on the soil boring and monitor well logs (Appendix A). At all locations the upper portion of the gamma logs indicated that the lithology was consistently sand. At locations LD B-7 and LD B-8, where staff was able to drive the 3.25-inch rods deeper, there was an increase in gamma counts with depth indicating that a finer grained material was encountered. At LD B-7 there was an increase in gamma count starting at about 44 feet. At LD B-8 there was also an increase in gamma counts at 44 feet with another increase at about 48 feet indicating that an even finer grained material was encountered. Both LD B-7 and LD B-8 are located near the shore of Van Etten Lake.

The GSU completed vertical aquifer sampling (VAS) at select soil boring and monitor well locations including LD B-4, LD B-7, LD B-8, LD MW-1, LD MW-3, LD MW-4, and LD MW-5. The VAS was done by driving 1.25-inch Geoprobe rods with a mill slotted lead. Staff collected groundwater samples from the depth shown on the boring log using a peristaltic pump. The samples were submitted to the DEQ Laboratory and analyzed for volatile organic compounds (VOCs) using USEPA Method 8260 (Table 3) (Appendix B). Duplicate groundwater samples were submitted to Test America and analyzed for PFCs (Table 5) (Appendix C).

The GSU conducted an elevation survey to determine the ground elevation of each soil boring and monitor well and the top of casing elevation for each monitor well (Table 2). Depth to groundwater levels were measured on November 14, 2016, and on December 7, 2016. These measurements were converted to a top of groundwater elevation also included on Table 2. Based on the top of groundwater elevations a groundwater flow direction could not be determined for this area. There appears to be a groundwater flow divide between Van Etten Lake and Lake Huron. The top of groundwater elevation at LD MW-4 (near the center of this study area) is higher in elevation than the groundwater closer to the edges of both Van Etten Lake and Lake Huron. The groundwater in the western portion of this area is likely flowing towards Van Etten Lake whereas the groundwater in the eastern portion of this area is likely flowing towards Lake Huron.

On November 14, 2016, groundwater samples were collected from each of the monitor wells. The sampling was conducted using a low-flow method. The samples were submitted to the DEQ Laboratory and analyzed for VOCs and 1,4-Dioxane using USEP Method 8260 (Table 3 and Table 4) (Appendix B). Duplicate groundwater samples were submitted to Test America and analyzed for PFCs (Table 5) (Appendix C).

A review of the VOC and 1,4-Dioxane results indicated that there were no detectable concentrations of 1,4-Dioxane in the samples collected from the monitor wells. There were very low concentrations (<2.0 µg/l) of toluene in three of the groundwater samples collected from the site. These were from LD MW-1 (30-35 feet), LD B-4 (8-13 feet), and LD B-4 (28-33 feet). These very low concentrations of toluene are likely the result of sample handling and not indicative of the groundwater at these locations.

The PFC compounds were detected in the majority of the groundwater samples collected from the Loud Drive area. However, all of the concentrations were below the action level of 70 ng/l. The highest PFC concentration (21.4 ng/l) was detected in the VAS sample from LD MW-3 at a depth of 10-15 feet.

In summary, the groundwater flow direction for the site could not be determined. However, there appears to be a groundwater flow divide between Van Etten Lake and Lake Huron with groundwater discharging to both lakes. The lithology of the site consists of sand with finer grained material at a depth of approximately 44 feet along the shore of Van Etten Lake. Toluene was the only VOC detected in the groundwater at the site. The concentrations of toluene are very low and are likely the result of sample handling and not indicative of the groundwater quality in this area. PFCs were detected across the Loud Drive area at concentrations that are well below the action level of 70 ng/l.

If you have any questions, contact me at 517-335-6418.

Attachments

cc: Burrell P. Shirey, DEQ

704617 E
441109 N

714736 E
441109 N

DEQ-CR-MW5
DEQ-CR-MW2
DEQ-CR-MW1
DEQ-CR-MW4
DEQ-CR-MW3

F41 / Colbath Road

DEQ-LD-B1
DEQ-LD-B2
DEQ-LD-MW1
DEQ-LD-B3
DEQ-LD-B4
DEQ-LD-MW5
DEQ-LD-B6
DEQ-LD-MW4
DEQ-LD-MW3
DEQ-LD-B5
DEQ-LD-B7
DEQ-LD-B8

Loud Drive

River Road

DEQ-RR-MW4
DEQ-RR-MW1
DEQ-RR-B1
DEQ-RR-MW2
DEQ-RR-MW5
DEQ-RR-MW3

WURTSMITH AIR FORCE BASE

VAN ETTEN LAKE

AU SABLE STATE FOREST

OSCODA

704617 E
433003 N

714736 E
433003 N

LEGEND

Soil Boring / Monitor Well

- DATUM - NAD83
- PROJECTION: MICHIGAN GEOREF
- NORTHING AND EASTING COORDINATES (IN METERS) ARE IN CORNERS OF MAP

AERIAL PHOTO SOURCE: MI CENTER FOR SHARED SOLUTIONS
AERIAL PHOTO DATE: NA
AERIAL RESOLUTION: USGS Topographic

N
W E
S

0 185 370 740 Meters

0 650 1,300 2,600 Feet

1 inch = 2,667 feet

Wurtsmith Air Force Base
ERNIE ID 53000152, 53000153, 53000154
OSCODA & AU SABLE TOWNSHIPS, IOSCO COUNTY

SITE LOCATIONS MAP

GEOLOGIST		CREATION DATE
Jeff Pincumbe Geological Services Unit		January 2017
Remediation and Redevelopment Division	DEQ	FIGURE 1

LEGEND

- Soil Boring / Monitor Well Location

- DATUM - NAD83
- PROJECTION: MICHIGAN GEOREF
- NORTHING AND EASTING COORDINATES (IN METERS) ARE IN CORNERS OF MAP

AERIAL PHOTO SOURCE: MI CENTER FOR SHARED SOLUTIONS
AERIAL PHOTO DATE: 2010
AERIAL RESOLUTION: 1 foot Natural Color

N
W E
S

0 65 130 260 Meters

0 250 500 1,000 Feet

1 inch = 1,000 feet

Wurtsmith - Loud Drive
ERNIE ID # 35000152
OSCODA TOWNSHIP, IOSCO COUNTY
T24N R9E SECTIONS 21, 22 & 27

SITE MAP

GEOLOGIST		CREATION DATE
Jeff Pincumbe Geological Services Unit		January 2017
Remediation and Redevelopment Division	DEQ	FIGURE 2

LOCATION	LATITUDE	LONGITUDE	NORTHING	EASTING
DEQ-LD-B1	44.466846	-83.346841	438458.657	710871.481
DEQ-LD-B2	44.464753	-83.34407	438233.36	711099.387
DEQ-LD-B3	44.462673	-83.341388	438009.285	711320.184
DEQ-LD-B4	44.460978	-83.338736	437827.895	711537.22
DEQ-LD-B5	44.458842	-83.337292	437594.416	711659.777
DEQ-LD-B6	44.456518	-83.335426	437341.152	711816.587
DEQ-LD-B7	44.451732	-83.336367	436807.221	711759.007
DEQ-LD-B8	44.450144	-83.336353	436630.906	711765.851
DEQ-LD-MW1	44.463487	-83.342762	438096.139	711207.973
DEQ-LD-MW3	44.457531	-83.336215	437451.609	711750.172
DEQ-LD-MW4	44.458696	-83.330823	437594.937	712174.846
DEQ-LD-MW5	44.46078	-83.325034	437841.38	712627.749

Elevation Data

Loud Drive,
Iosco County

Table #2
(Page 1 of 1)

Monitor Wells	Top of Casing (TOC) Elevation	Ground Elevation	Total Depth from TOC	Total Depth from Ground	Static Water Level (TOC) 11/14/16	Groundwater Elevation 11/14/16	Static Water Level (TOC) 12/7/16	Groundwater Elevation 12/7/16
LD-MW-1	597.13	597.69	14.20	14.76	8.15	588.98	9.06	588.07
LD-MW-3	597.29	597.87	15.90	16.48	9.98	587.31	11.17	586.12
LD-MW-4	598.74	598.82	15.00	15.09	7.48	591.26	7.58	591.16
LD-MW-5	586.64	586.91	10.10	10.37	2.01	584.63	1.58	585.06
LD-B-1	NA	599.44						
LD-B-2	NA	599.49						
LD-B-3	NA	596.451						
LD-B-4	NA	595.54						
LD-B-5	NA	596.30						
LD-B-6	NA	604.11						
LD-B-7	NA	593.74						
LD-B-8	NA	591.67						

Michigan Department of Environmental Quality Analytical Testing Report
Work Orders: 1610143 1610157 1611132
Report Dates: 11/28/16 11/23/2016 12/6/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: LOUD DRIVE PCE, IOSCO CO.
Project Number: 35000152

Sample Number								1610143-01	1610143-02	1610143-03	1610143-04	1610143-05	1610143-06
Sample ID			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	MW-3	MW-3	MW-3	MW-4	MW-4	MW-4
Sample Depth								10-15 feet	20-25 feet	30-35 feet	12-14 feet	22-24 feet	32-34 feet
Date Collected								10/18/2016	10/18/2016	10/18/2016	10/17/2016	10/17/2016	10/17/2016
Date Received								10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016
Analyte	Units	Method	Organics-Volatiles										
1,1,1,2-Tetrachloroethane	ug/L	8260	1	77	ID	15,000	ID	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	8260	1	9	78	12,000	1,800	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	8260	1	880	740	1,000,000	13,000	<1	<1	<1	<1	<1	<1
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	ug/L	8260	1	42	NA	8,300	NA	<1	<1	<1	<1	<1	<1
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	8260	5	70	99	300,000	850	<5	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	8260	1	600	13	160,000	240	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	8260	1	5	230	16,000	4,000	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	8260	1	7	28	18,000	200	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<1	<1	<1	<1	<1
2-Butanone (MEK)	ug/L	8260	25	13,000	2,200	240,000,000	40,000	<5	<5	<5	<5	<5	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<5	<5	<5	<5	<5
2-Propanone (acetone)	ug/L	8260	50	730	1,700	1,000,000,000	30,000	<20	<20	<20	<20	<20	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	8260	5	430	1,100	5,700,000	20,000	<5	<5	<5	<5	<5	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethylene	ug/L	8260	1	70	620	93,000	11,000	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Methylene chloride	ug/L	8260	5	5	1,500	220,000	17,000	<5	<5	<5	<5	<5	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
tertiary Butyl Alcohol	ug/L	8260	50	3,900	NA	1,000,000,000	NA	<50	<50	<50	<50	<50	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<1	<1	<1	<1	<1
Tetrahydrofuran	ug/L	8260	90	95	11,000	6,900,000	150,000	<5	<5	<5	<5	<5	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethylene	ug/L	8260	1	100	1,500	85,000	28,000	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
trans-1,4-Dichloro-2-butene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<1	<1	<1	<1	<1

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria: GVIIC and/or FAV.
"ID" means insufficient data to develop criterion.
"NA" means a criterion or value is not available or, in the case of background, not applicable.
"NLV" means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Michigan Department of Environmental Quality Analytical Testing Report
Work Orders: 1610143 1610157 1611132
Report Dates: 11/28/16 11/23/2016 12/6/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: LOUD DRIVE PCE, IOSCO CO.
Project Number: 35000152

Sample Number								1610143-07	1610143-08	1610143-09	1610143-10	1610143-11	1610143-12
Sample ID			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	MW-5	B-7	B-7	B-7	B-7 Dup	B-8
Sample Depth								5-10 feet	8-13 feet	18-23 feet	28-33 feet	28-33 feet	5-10 feet
Date Collected								10/19/2016	10/19/2016	10/19/2016	10/19/2016	10/19/2016	10/19/2016
Date Received								10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016
Analyte	Units	Method	Organics-Volatiles										
1,1,1,2-Tetrachloroethane	ug/L	8260	1	77	ID	15,000	ID	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	8260	1	9	78	12,000	1,800	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	8260	1	880	740	1,000,000	13,000	<1	<1	<1	<1	<1	<1
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	ug/L	8260	1	42	NA	8,300	NA	<1	<1	<1	<1	<1	<1
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	8260	5	70	99	300,000	850	<5	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	8260	1	600	13	160,000	240	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	8260	1	5	230	16,000	4,000	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	8260	1	7	28	18,000	200	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<1	<1	<1	<1	<1
2-Butanone (MEK)	ug/L	8260	25	13,000	2,200	240,000,000	40,000	<5	<5	<5	<5	<5	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<5	<5	<5	<5	<5
2-Propanone (acetone)	ug/L	8260	50	730	1,700	1,000,000,000	30,000	<20	<20	<20	<20	<20	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	8260	5	430	1,100	5,700,000	20,000	<5	<5	<5	<5	<5	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethylene	ug/L	8260	1	70	620	93,000	11,000	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Methylene chloride	ug/L	8260	5	5	1,500	220,000	17,000	<5	<5	<5	<5	<5	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
tertiary Butyl Alcohol	ug/L	8260	50	3,900	NA	1,000,000,000	NA	<50	<50	<50	<50	<50	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<1	<1	<1	<1	<1
Tetrahydrofuran	ug/L	8260	90	95	11,000	6,900,000	150,000	<5	<5	<5	<5	<5	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethylene	ug/L	8260	1	100	1,500	85,000	28,000	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
trans-1,4-Dichloro-2-butene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<1	<1	<1	<1	<1

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria, GVIIC and/or FAV.
"ID" means insufficient data to develop criterion.
"NA" means a criterion or value is not available or, in the case of background, not applicable.
"NLV" means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Michigan Department of Environmental Quality Analytical Testing Report
Work Orders: 1610143 1610157 1611132
Report Dates: 11/28/16 11/23/2016 12/6/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: LOUD DRIVE PCE, IOSCO CO.
Project Number: 35000152

Sample Number								1610143-13	1610143-14	1610143-15	1610143-16	1610157-01	1610157-02
Sample ID			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	B-8	B-8	B-8	B-8	MW-1	MW-1
Sample Depth								15-20 feet	25-30 feet	35-40 feet	45-50 feet	10-15 feet	20-25 feet
Date Collected								10/19/2016	10/19/2016	10/19/2016	10/19/2016	10/20/2016	10/20/2016
Date Received								10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/21/2016	10/21/2016
Analyte	Units	Method	Organics-Volatiles										
1,1,1,2-Tetrachloroethane	ug/L	8260	1	77	ID	15,000	ID	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	8260	1	9	78	12,000	1,800	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	8260	1	880	740	1,000,000	13,000	<1	<1	<1	<1	<1	<1
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	ug/L	8260	1	42	NA	8,300	NA	<1	<1	<1	<1	<1	<1
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	8260	5	70	99	300,000	850	<5	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	8260	1	600	13	160,000	240	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	8260	1	5	230	16,000	4,000	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	8260	1	7	28	18,000	200	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<1	<1	<1	<1	<1
2-Butanone (MEK)	ug/L	8260	25	13,000	2,200	240,000,000	40,000	<5	<5	<5	<5	<5	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<5	<5	<5	<5	<5
2-Propanone (acetone)	ug/L	8260	50	730	1,700	1,000,000,000	30,000	<20	<20	<20	<20	<20	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	8260	5	430	1,100	5,700,000	20,000	<5	<5	<5	<5	<5	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethylene	ug/L	8260	1	70	620	93,000	11,000	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Methylene chloride	ug/L	8260	5	5	1,500	220,000	17,000	<5	<5	<5	<5	<5	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
tertiary Butyl Alcohol	ug/L	8260	50	3,900	NA	1,000,000,000	NA	<50	<50	<50	<50	<50	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<1	<1	<1	<1	<1
Tetrahydrofuran	ug/L	8260	90	95	11,000	6,900,000	150,000	<5	<5	<5	<5	<5	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	<1	<1	<1	<1	<1	<1
trans-1,2-Dichloroethylene	ug/L	8260	1	100	1,500	85,000	28,000	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
trans-1,4-Dichloro-2-butene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<1	<1	<1	<1	<1

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria: GVIIC and/or FAV.
"ID" means insufficient data to develop criterion.
"NA" means a criterion or value is not available or, in the case of background, not applicable.
"NLV" means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Michigan Department of Environmental Quality Analytical Testing Report
Work Orders: 1610143 1610157 1611132
Report Dates: 11/28/16 11/23/2016 12/6/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: LOUD DRIVE PCE, IOSCO CO.
Project Number: 35000152

Sample Number								1610157-03	1610157-04	1610157-05	1610157-06	1610157-07	1611132-01
Sample ID			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	MW-1	MW-1 Dup	B-4	B-4	B-4	MW-1
Sample Depth								30-35 feet	30-35 feet	8-13 feet	18-23 feet	28-33 feet	
Date Collected								10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016	11/14/2016
Date Received								10/21/2016	10/21/2016	10/21/2016	10/21/2016	10/21/2016	11/15/2016
Analyte	Units	Method	Organics-Volatiles										
1,1,1,2-Tetrachloroethane	ug/L	8260	1	77	ID	15,000	ID	<1	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	8260	1	9	78	12,000	1,800	<1	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<1	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	8260	1	880	740	1,000,000	13,000	<1	<1	<1	<1	<1	<1
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
1,2,3-Trichloropropane	ug/L	8260	1	42	NA	8,300	NA	<1	<1	<1	<1	<1	<1
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	8260	5	70	99	300,000	850	<5	<5	<5	<5	<5	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	8260	1	600	13	160,000	240	<1	<1	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<1	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	8260	1	5	230	16,000	4,000	<1	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	8260	1	7	28	18,000	200	<1	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<1	<1	<1	<1	<1
2-Butanone (MEK)	ug/L	8260	25	13,000	2,200	240,000,000	40,000	<5	<5	<5	<5	<5	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<5	<5	<5	<5	<5
2-Propanone (acetone)	ug/L	8260	50	730	1,700	1,000,000,000	30,000	<20	<20	<20	<20	<20	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	8260	5	430	1,100	5,700,000	20,000	<5	<5	<5	<5	<5	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethylene	ug/L	8260	1	70	620	93,000	11,000	<1	<1	<1	<1	<1	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
Methylene chloride	ug/L	8260	5	5	1,500	220,000	17,000	<5	<5	<5	<5	<5	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1
tertiary Butyl Alcohol	ug/L	8260	50	3,900	NA	1,000,000,000	NA	<50	<50	<50	<50	<50	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<1	<1	<1	<1	<1
Tetrahydrofuran	ug/L	8260	90	95	11,000	6,900,000	150,000	<5	<5	<5	<5	<5	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	1	0.94	1.2	<1	1.5	<1
trans-1,2-Dichloroethylene	ug/L	8260	1	100	1,500	85,000	28,000	<1	<1	<1	<1	<1	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1
trans-1,4-Dichloro-2-butene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<1	<1	<1	<1	<1

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria; GVIIC and/or FAV.
"ID" means insufficient data to develop criterion.
"NA" means a criterion or value is not available or, in the case of background, not applicable.
"NLV" means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Michigan Department of Environmental Quality Analytical Testing Report
Work Orders: 1610143 1610157 1611132
Report Dates: 11/28/16 11/23/2016 12/6/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: LOUD DRIVE PCE, IOSCO CO.
Project Number: 35000152

Sample Number								1611132-02	1611132-03	1611132-04	1611132-05
Sample ID			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	MW-3	MW-3 Dup	MW-4	MW-5
Sample Depth											
Date Collected								11/14/2016	11/14/2016	11/14/2016	11/14/2016
Date Received								11/15/2016	11/15/2016	11/15/2016	11/15/2016
Analyte	Units	Method	Organics-Volatiles								
1,1,1,2-Tetrachloroethane	ug/L	8260	1	77	ID	15,000	ID	<1	<1	<1	<1
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	8260	1	9	78	12,000	1,800	<1	<1	<1	<1
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<1	<1	<1
1,1-Dichloroethane	ug/L	8260	1	880	740	1,000,000	13,000	<1	<1	<1	<1
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5
1,2,3-Trichloropropane	ug/L	8260	1	42	NA	8,300	NA	<1	<1	<1	<1
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1
1,2,4-Trichlorobenzene	ug/L	8260	5	70	99	300,000	850	<5	<5	<5	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<1	<1	<1
1,2-Dichlorobenzene	ug/L	8260	1	600	13	160,000	240	<1	<1	<1	<1
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<1	<1	<1
1,2-Dichloropropane	ug/L	8260	1	5	230	16,000	4,000	<1	<1	<1	<1
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<1	<1	<1
1,3-Dichlorobenzene	ug/L	8260	1	7	28	18,000	200	<1	<1	<1	<1
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<1	<1	<1
2-Butanone (MEK)	ug/L	8260	25	13,000	2,200	240,000,000	40,000	<5	<5	<5	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<5	<5	<5
2-Propanone (acetone)	ug/L	8260	50	730	1,700	1,000,000,000	30,000	<20	<20	<20	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<1	<1	<1
Chloroethane	ug/L	8260	5	430	1,100	5,700,000	20,000	<5	<5	<5	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<5	<5	<5
cis-1,2-Dichloroethylene	ug/L	8260	1	70	620	93,000	11,000	<1	<1	<1	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1
Methylene chloride	ug/L	8260	5	5	1,500	220,000	17,000	<5	<5	<5	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1
tertiary Butyl Alcohol	ug/L	8260	50	3,900	NA	1,000,000,000	NA	<50	<50	<50	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<1	<1	<1
Tetrahydrofuran	ug/L	8260	90	95	11,000	6,900,000	150,000	<5	<5	<5	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	<1	<1	<1	<1
trans-1,2-Dichloroethylene	ug/L	8260	1	100	1,500	85,000	28,000	<1	<1	<1	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1
trans-1,4-Dichloro-2-butene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<1	<1	<1

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria: GVIIC and/or FAV.
"ID" means insufficient data to develop criterion.
"NA" means a criterion or value is not available or, in the case of background, not applicable.
"NLV" means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Michigan Department of Environmental Quality Analytical Testing Report

Table #4

Work Order: 1611132
Report Date: 12/6/2016 10:50
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: LOUD DRIVE PCE, IOSCO CO.
Project Number: 35000152

Sample Number			Target Detection Limit (TDL)	Drinking Water Criteria (DWC)	Groundwater Surface Water Interface Criteria (GSIC)	Groundwater Volatilization to Indoor Air Inhalation Criteria (GVIIC)	Rule 57 Final Acute Value (FAV)	1611132-01	1611132-02	1611132-03	1611132-04	1611132-05
Sample ID								MW-1	MW-3	MW-3 DUP	MW-4	MW-5
Sample Depth												
Date Collected								11/14/2016	11/14/2016	11/14/2016	11/14/2016	11/14/2016
Date Received								11/15/2016	11/15/2016	11/15/2016	11/15/2016	11/15/2016
Analyte	Units	Method	Organics-Dioxane									
1,4-dioxane	ug/L	8260 Modified	1	85	2,800	NLV	390,000	<1	<1	<1	<1	<1

Grey indicates contaminant was detected.
Yellow indicates contaminant exceeds DWC.
Blue indicates contaminant exceeds GSIC.
Green indicates contaminant exceeds both DWC and GSIC.
Orange indicates contaminant exceeds one or more criteria; GVIIC and/or FAV.
"ID" means insufficient data to develop criterion.
"NA" means a criterion or value is not available or, in the case of background, not applicable.
"NLV" means hazardous substance is not likely to volatilize under most conditions.
Letters in criteria columns refer to Footnotes of the Criteria/RBSLs tables.

Testing America Analytical Testing Report

Test America Job IDs	320-22916-1	320-23113-1	320-23603-1
Report Date:	11/8/16	11/8/2016	12/15/2016
Client:	MDEQ-RRD-SAGINAW BAY		
Attention:	Mike Jury		
Project Name:	LOUD DRIVE PCE, IOSCO CO.		
Project Number:	35000152		

Location		B-4	B-4	B-4	B-7	B-7	B-7	B-7 Dup	B-8
Depth		8-13 feet	18-23 feet	28-33 feet	28-33 feet	8-13 feet	18-23 feet	28-33 feet	25-30 feet
Date		10/20/2016	10/20/2016	10/20/2016	10/19/2016	10/19/2016	10/19/2016	10/19/2016	10/19/2016
	Action Level								
Perfluorooctanoic Acid (PFOA)	70 ng/l	**0.6**	<.7	**0.97**	<0.74	**7.1**	**1.7**	<.73	**7.1**
Perfluorooctane Sulfonate (PFOS)	70 ng/l	<1	<1.2	<1.2	<1.3	**5.1**	<1.2	<1.2	<1.2
Total PFOA and PFOS	70 ng/l	**0.6**	ND	**0.97**	ND	**12.2**	**1.7**	ND	**7.1**

Location		B-8	B-8	B-8	B-8	MW-1	MW-1	MW-1	MW-3
Depth		5-10 feet	15-20 feet	35-40 feet	45-50 feet	10-15 feet	20-25 feet	30-35 feet	10-15 feet
Date		10/19/2016	10/19/2016	10/19/2016	10/19/2016	10/20/2016	10/20/2016	10/20/2016	10/17/2016
	Action Level								
Perfluorooctanoic Acid (PFOA)	70 ng/l	**3.8**	**4.3**	**8.1**	**2.1**	**4.7**	**8.4**	**2.9**	**8.4**
Perfluorooctane Sulfonate (PFOS)	70 ng/l	**1.5**	<1.2	<1.2	<1.2	**2.8**	**7.1**	**2.5**	**13**
Total PFOA and PFOS	70 ng/l	**5.3**	**4.3**	**8.1**	**2.1**	**7.5**	**15.5**	**5.4**	**21.4**

Location		MW-3	MW-3	MW-4	MW-4	MW-5	MW-1	MW-3	MW-3 Dup
Depth		20-25 feet	30-35 feet	22-24 feet	12-14 feet	5-10 feet			
Date		10/17/2016	10/17/2016	10/17/2016	10/19/2016	10/19/2016	11/14/2016	11/14/2016	11/14/2016
	Action Level								
Perfluorooctanoic Acid (PFOA)	70 ng/l	**4.1**	**7.8**	<0.64	<0.72	**1.5**	**3.1**	**4.1**	**4.1**
Perfluorooctane Sulfonate (PFOS)	70 ng/l	<1.2	<1.3	<1.1	<1.2	**3.9**	**5**	**2.1**	**2.2**
Total PFOA and PFOS	70 ng/l	**4.1**	**7.8**	ND	ND	**5.4**	**8.1**	**6.2**	**6.3**

Location		MW-4	MW-5
Depth			
Date		11/14/2016	11/14/2016
	Action Level		
Perfluorooctanoic Acid (PFOA)	70 ng/l	<.71	**0.76**
Perfluorooctane Sulfonate (PFOS)	70 ng/l	<1.2	**2.9**
Total PFOA and PFOS	70 ng/l	ND	**3.66**

ND = Not Detected

APPENDIX A

Wurtsmith-Loud Drive, Iosco County
Site ID #35000152

DEQ Soil Boring and Monitor Well Logs

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

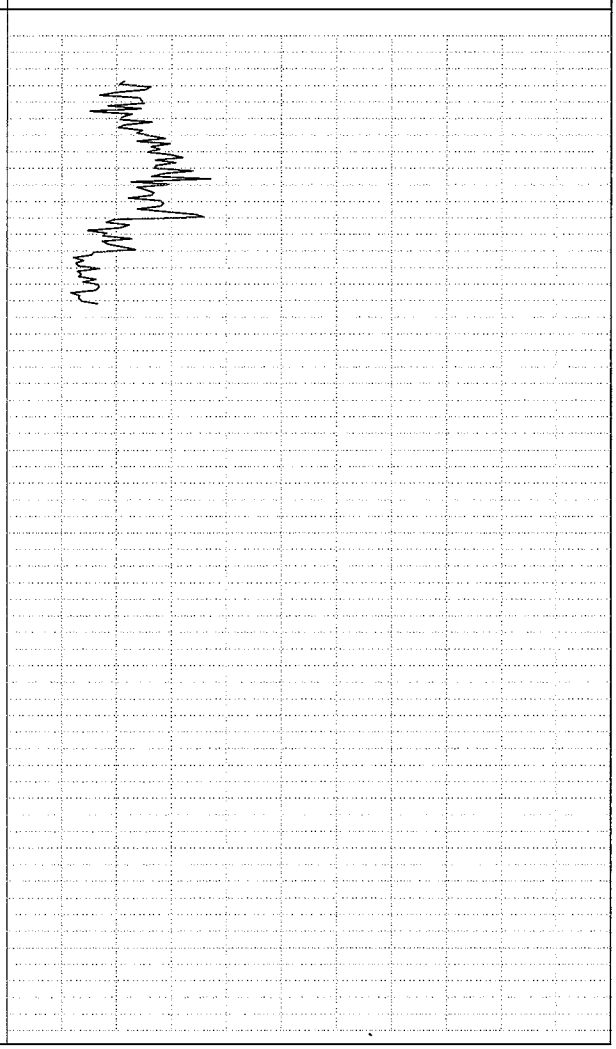
BORING/WELL: LD-B1

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 21
LOCATION DESCRIPTION: Across from 6487 Loud Drive

LOGGING DATE: 10-20-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: NA
ERNIE#: 35000152

WELL CONSTRUCTION	LITHOLOGIC LOG	DESCRIPTION	DEPTH
		Grd.	0
		TOP SOIL	
		SAND Fine, light brown, saturated at 10 feet.	5, 10
		NO CUTTINGS Able to drive 3.25 inch rods to 17 feet - refusal.	15
		No groundwater samples collected from this location.	
		Log TD	20
			25, 30, 35, 40, 45, 50, 55, 60



VERTICAL DATUM: USGS
GRD. ELEVATION: 599.44
T.O.C.: NA
S.W.L.: 10 feet
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.466846
LONGITUDE: -83.346841
DATUM: MichGeoRef
NORTHING: 438458.657
EASTING: 710871.481

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

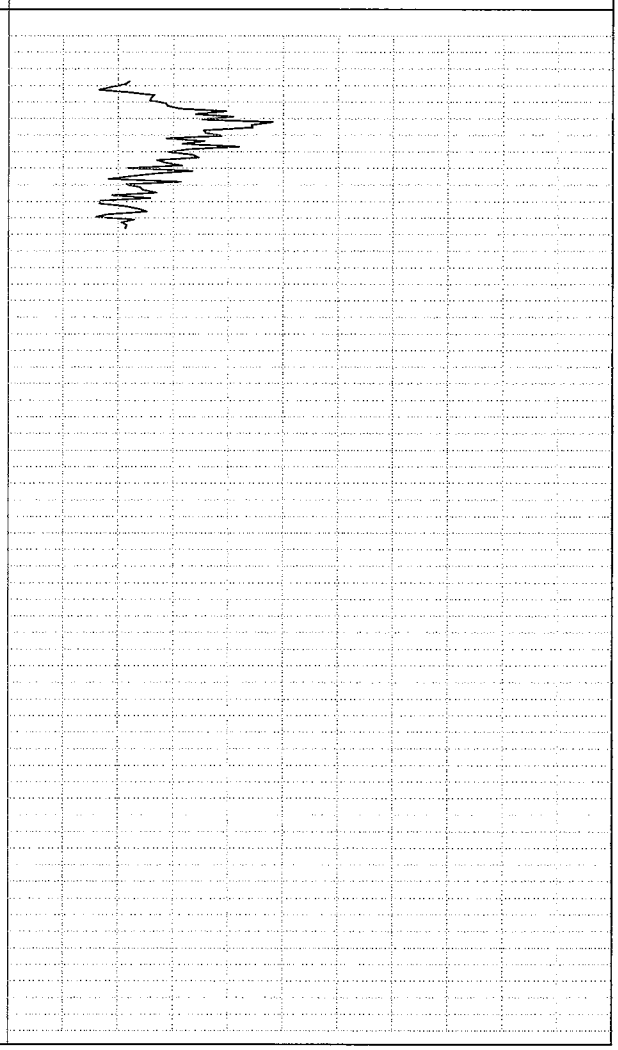
BORING/WELL: LD-B2

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22
LOCATION DESCRIPTION: Front yard at 6468 Loud Drive

LOGGING DATE: 10-20-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: NA
ERNIE#: 35000152

WELL CONSTRUCTION	LITHOLOGIC LOG	DESCRIPTION	DEPTH
		Grd.	0
		TOP SOIL	
		SAND Fine, light brown, saturated at 10 feet	5
			10
		SAND Coarse, light brown	
		Refusal at 13 feet. No groundwater samples collected from this locations.	15
		Log TD	20
			25
			30
			35
			40
			45
			50
			55
			60



VERTICAL DATUM: USGS
GRD. ELEVATION: 599.489
T.O.C.: NA
S.W.L.: 10 feet
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.464753
LONGITUDE: -83.34407
DATUM: MichGeoRef
NORTHING: 438233.360
EASTING: 711099.387

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

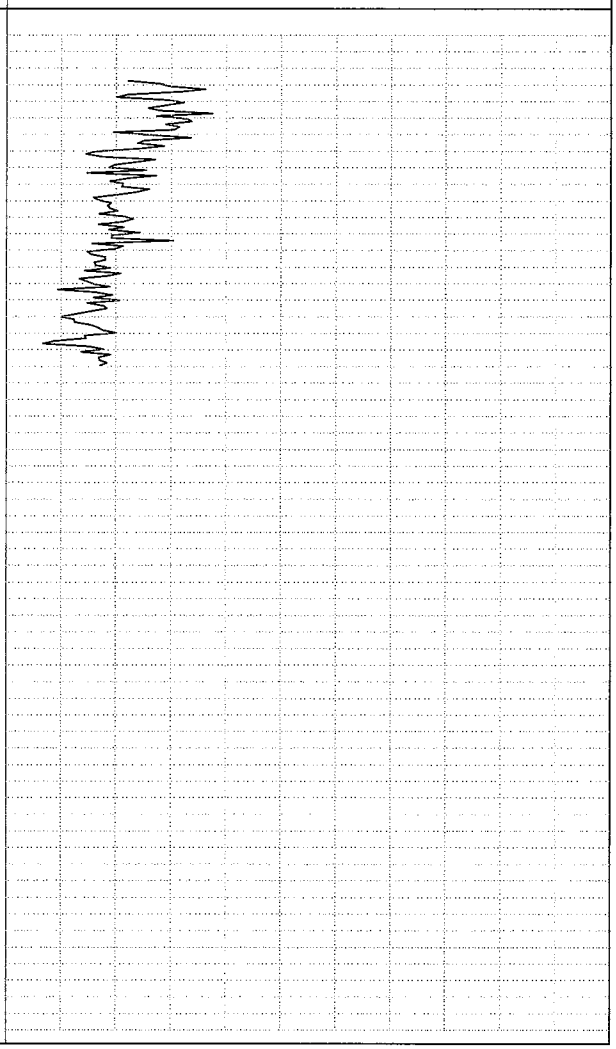
BORING/WELL: LD-B3

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22
LOCATION DESCRIPTION: Across from 6385 Loud Drive

LOGGING DATE: 10-20-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: NA
ERNIE#: 35000152

WELL CONSTRUCTION	LITHOLOGIC LOG	DESCRIPTION	DEPTH
		Grd.	0
		TOP SOIL	
		SAND Fine to medium, brown	5
		SAND Medium to coarse, light brown, saturated at 10 feet	10
		SAND Fine to medium. light brown	
		NO CUTTINGS Able to drive 3.25 inch rods to 21 feet - refusal. No groundwater samples collected at this location.	15
			20
		Log TD	25
			30
			35
			40
			45
			50
			55
			60



VERTICAL DATUM: USGS
GRD. ELEVATION: 596.451
T.O.C.: NA
S.W.L.: 10 feet
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.462673
LONGITUDE: -83.341388
DATUM: MichGeoRef
NORTHING: 438009.285
EASTING: 711320.184

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

BORING/WELL: LD-B4

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22

LOGGING DATE: 10-20-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: NA

LOCATION DESCRIPTION: Front yard at 4515 Interlake Road east of Loud Drive

ERNIE#: 35000152

WELL CONSTRUCTION	LITHOLOGIC LOG	DESCRIPTION	DEPTH	Gamma Log (cps)
		Grd.	0	10 20 30 40 50 60 70 80 90 100
		TOP SOIL		
		SILTY CLAY Gray		
		SAND Fine to medium, light brown, saturated at 5 feet	5	
		Groundwater sample collected from 8-13 feet	10	
		NO CUTTINGS Able to drive 3.25 inch rods to 17 feet - refusal. Groundwater samples collected with 1.25 inch rods.	15	
		Groundwater sample collected from 18-23 feet	20	
			25	
		Groundwater sample collected from 28-33 feet - very silty	30	
			35	
		Log TD	40	
			45	
			50	
			55	
			60	

VERTICAL DATUM: USGS
GRD. ELEVATION: 598.824
T.O.C.: NA
S.W.L.: 5 feet
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.460978
LONGITUDE: -83.338736
DATUM: MichGeoRef
NORTHING: 437827.895
EASTING: 711537.220

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

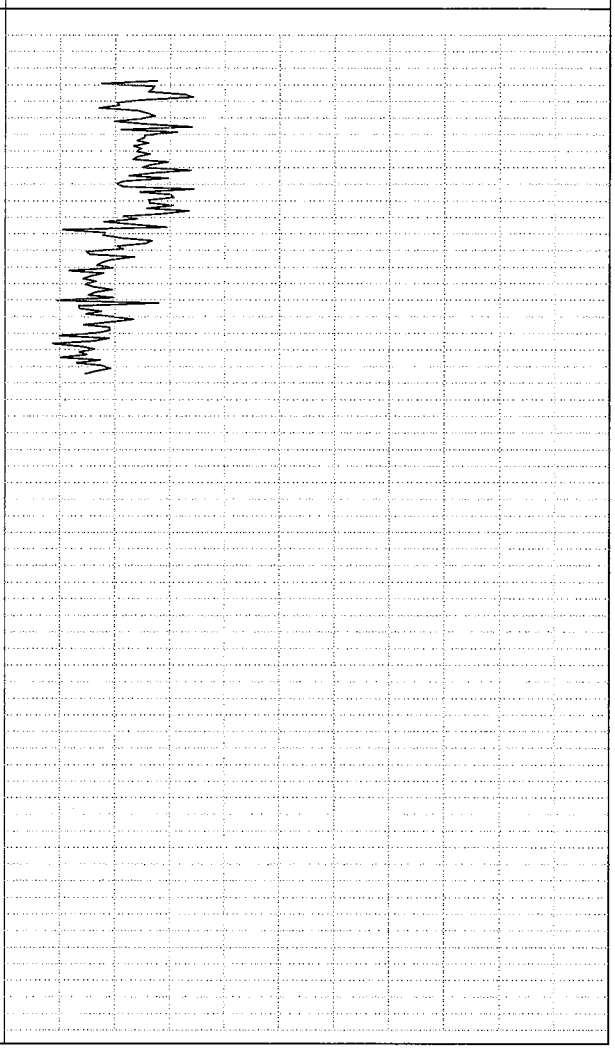
BORING/WELL: LD-B5

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22
LOCATION DESCRIPTION: Across from 6151 Loud Drive

LOGGING DATE: 10-19-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: NA
ERNIE#: 35000152

WELL CONSTRUCTION	LITHOLOGIC LOG	DESCRIPTION	DEPTH
		Grd.	0
		TOP SOIL	
		SAND Fine to medium, brown, saturated at 6 feet	5
			10
		SAND Coarse, brown	
		NO CUTTINGS Probed to 21 feet with 3.25 inch rods with refusal at 21 feet. No groundwater samples collected at this location.	15
			20
		Log TD	
			25
			30
			35
			40
			45
			50
			55
			60



VERTICAL DATUM: USGS
GRD. ELEVATION: 596.302
T.O.C.: NA
S.W.L.: 6 feet
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.458842
LONGITUDE: -83.337292
DATUM: MichGeoRef
NORTHING: 437594.416
EASTING: 711659.777

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

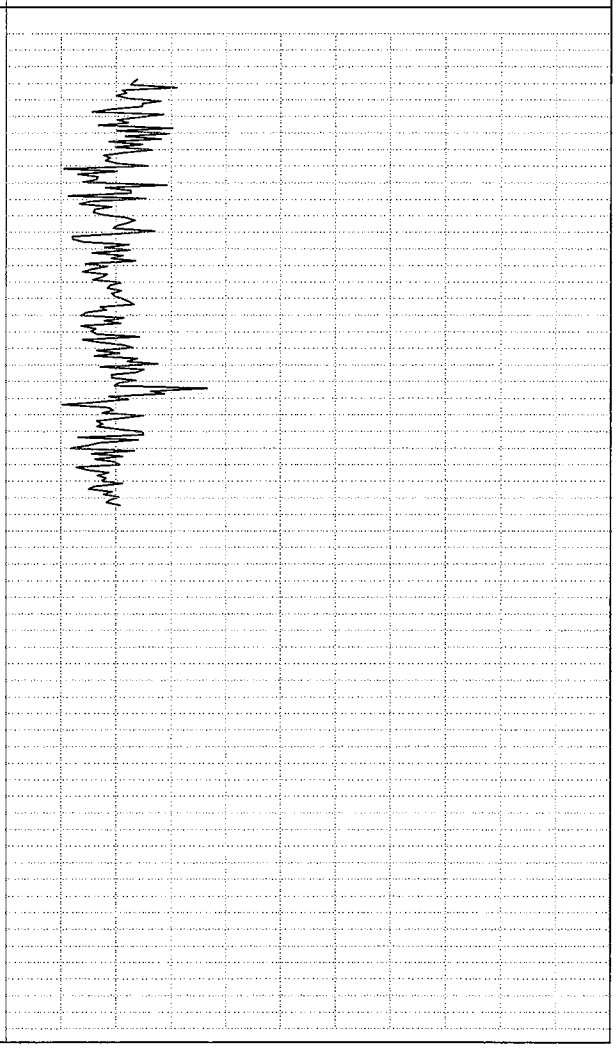
BORING/WELL: LD-B6

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22
LOCATION DESCRIPTION: Across from 6077 Loud Drive

LOGGING DATE: 10-19-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: NA
ERNIE#: 35000152

WELL CONSTRUCTION	LITHOLOGIC LOG	DESCRIPTION	DEPTH
		Grd.	0
		TOP SOIL	
		SAND Fine, light brown, saturated at 15 feet	5
			10
			15
		NO CUTTINGS Probe to 29 feet with 3.25 inch rods with refusal at 29 feet. No groundwater samples collected at this location.	20
			25
		Log TD	30
			35
			40
			45
			50
			55
			60



VERTICAL DATUM: USGS
GRD. ELEVATION: 604.114
T.O.C.: NA
S.W.L.: 14 feet
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentoite

LATITUDE: 44.456518
LONGITUDE: -83.335426
DATUM: MichGeoRef
NORTHING: 437341.152
EASTING: 711816.587

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

BORING/WELL: LD-B7

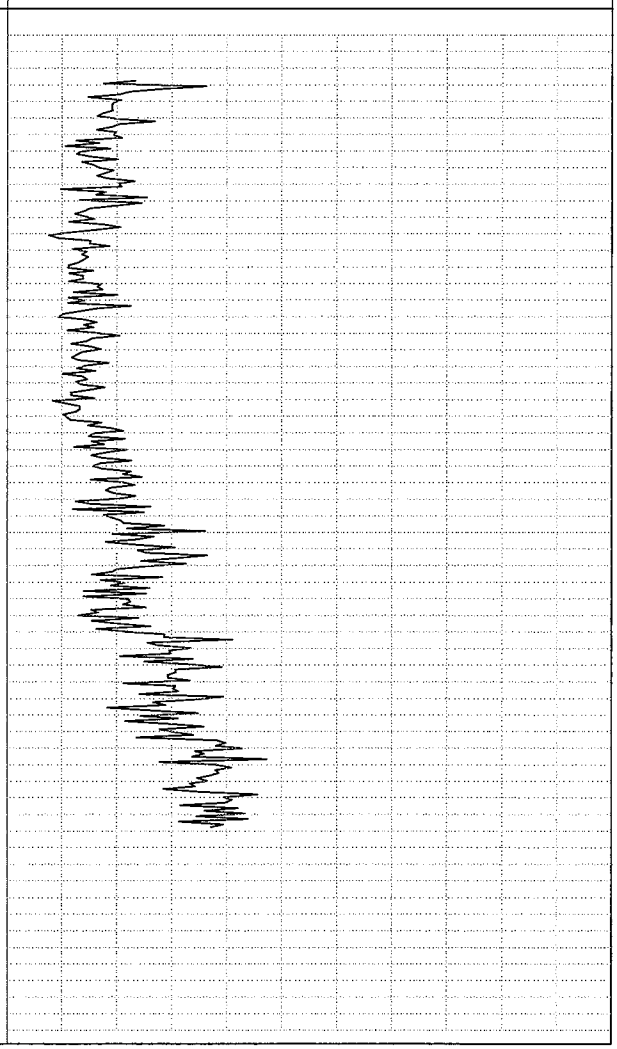
SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 27
LOCATION DESCRIPTION: West end of Oscoda Street

LOGGING DATE: 10-18-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: NA

ERNIE#: 35000152

WELL CONSTRUCTION	LITHOLOGIC LOG	DESCRIPTION	DEPTH
		Grd.	0
		TOP SOIL	
		SAND Medium to coarse, dark gray	
		SAND Fine to medium, light brown, saturated at 8 feet	5
		Groundwater sample collected from 8-13 feet	10
		NO CUTTINGS Able to drive 3.25 inch rods to 48 feet - refusal.	15
		Groundwater samples collected with 1.25 inch rods.	
		Groundwater sample collected from 18-23 feet	20
			25
		Groundwater sample collected from 28-33 feet	30
			35
		Too silty to collect a groundwater sample from 38-43 feet	40
			45
		Log TD	50
			55
			60



VERTICAL DATUM: USGS
GRD. ELEVATION: 593.743
T.O.C.: NA
S.W.L.: 8 feet
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.451732
LONGITUDE: -83.336367
DATUM: MichGeoRef
NORTHING: 436807.221
EASTING: 711759.007

DEQ Remediation and Redevelopment Division

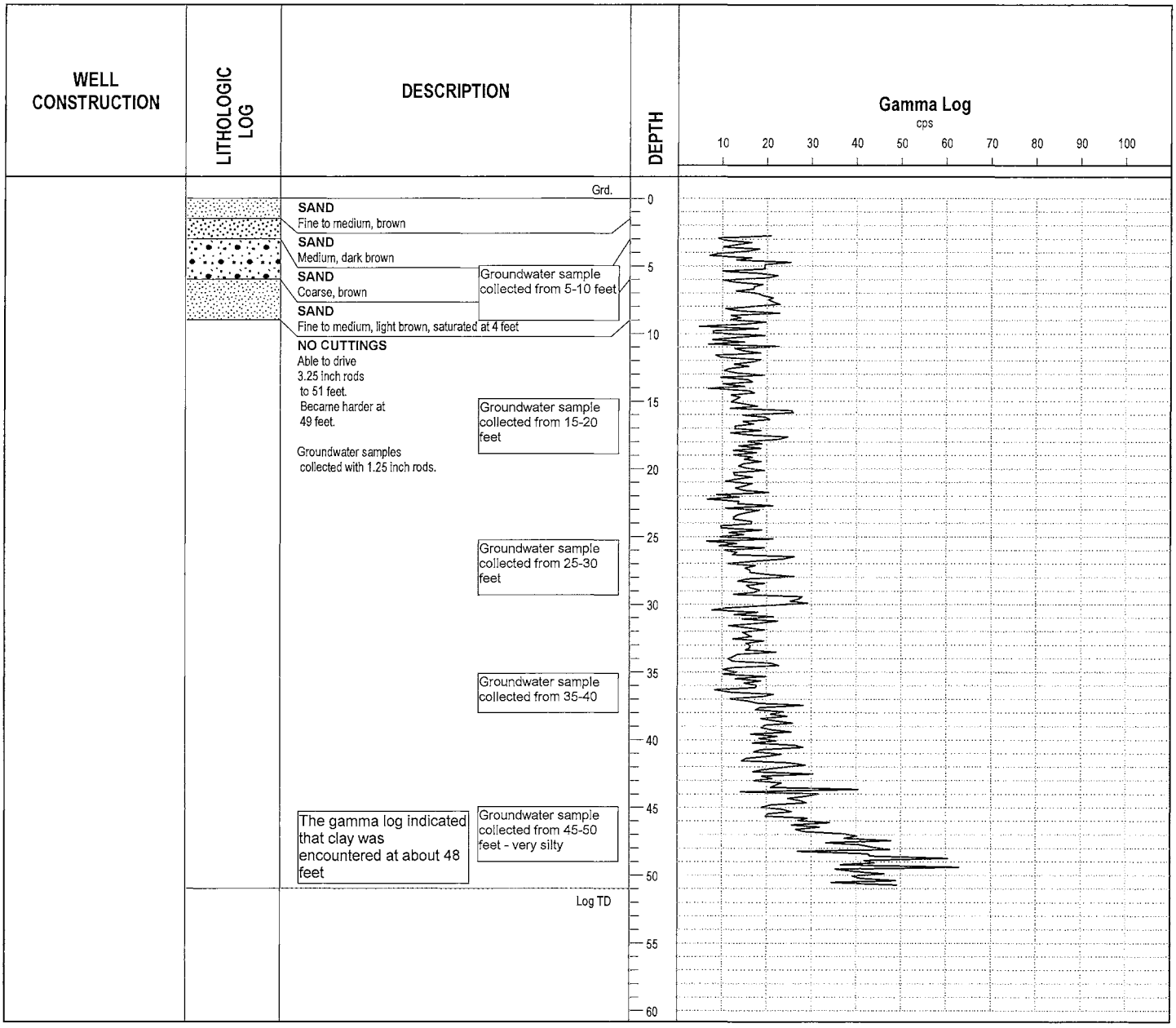
GEOPHYSICAL LOG

BORING/WELL: LD-B8

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 27
LOCATION DESCRIPTION: 4611 Oak Street near edge of Van Etten Lake

LOGGING DATE: 10-18-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: NA
ERNIE#: 35000152



VERTICAL DATUM: USGS
GRD. ELEVATION: 591.667
T.O.C.: NA
S.W.L.: 4 feet
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.450144
LONGITUDE: -83.336353
DATUM: MichGeoRef
NORTHING: 436630.906
EASTING: 711765.851

DEQ Remediation and Redevelopment Division

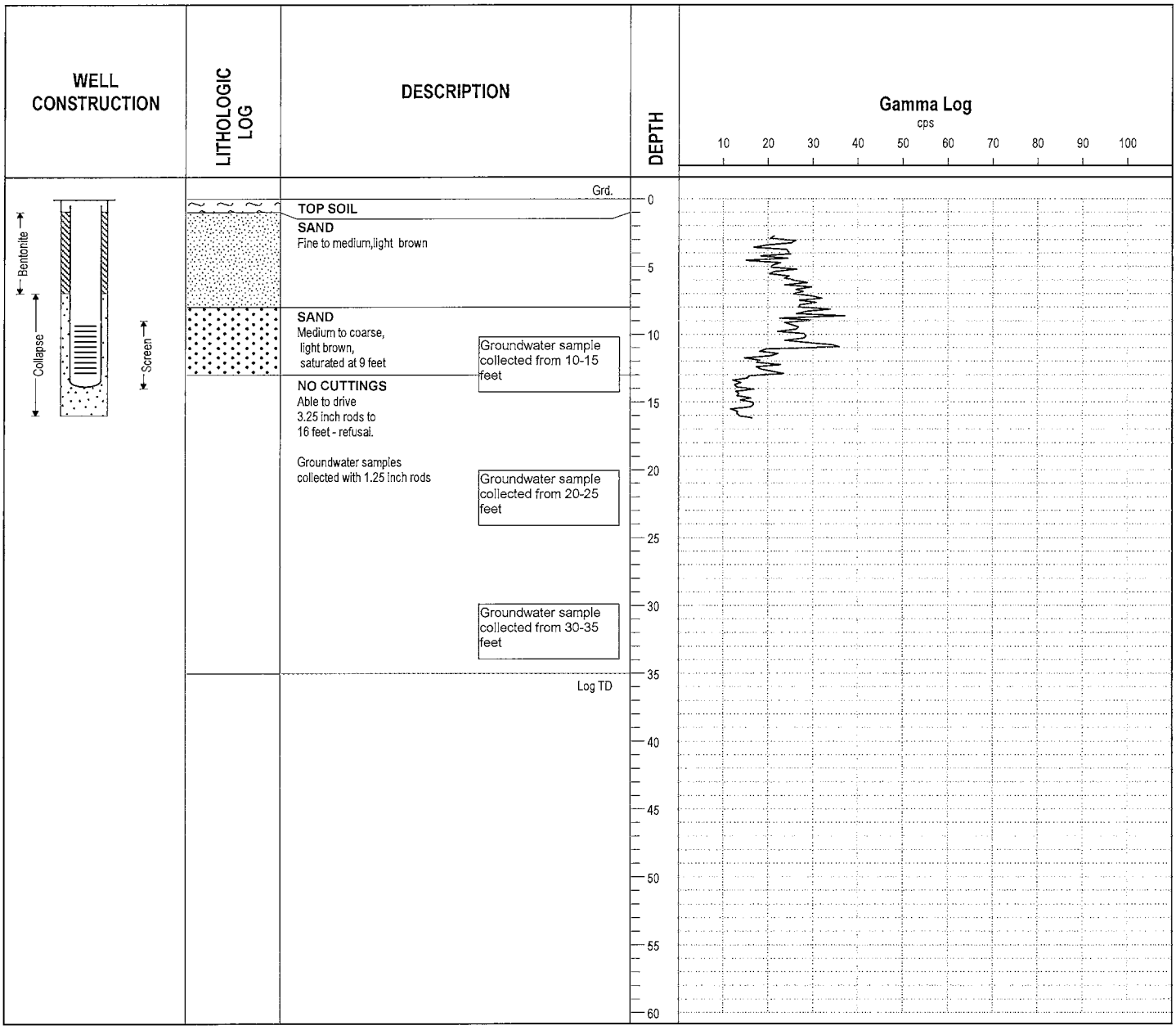
GEOPHYSICAL LOG

BORING/WELL: LD-MW-1

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22
LOCATION DESCRIPTION: North of driveway at 6407 Loud Drive

LOGGING DATE: 10-20-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 14 feet
ERNIE#: 35000152



VERTICAL DATUM: USGS
GRD. ELEVATION: 597.694
T.O.C.: 597.13
S.W.L.: 8.1 feet
CASING: 2-inch I.D. pvc
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Collapse to 8 feet, sand to 7 feet, bentonite to 1 foot

LATITUDE: 44.463487
LONGITUDE: -83.342762
DATUM: MichGeoRef
NORTHING: 438096.139
EASTING: 711207.973

DEQ Remediation and Redevelopment Division

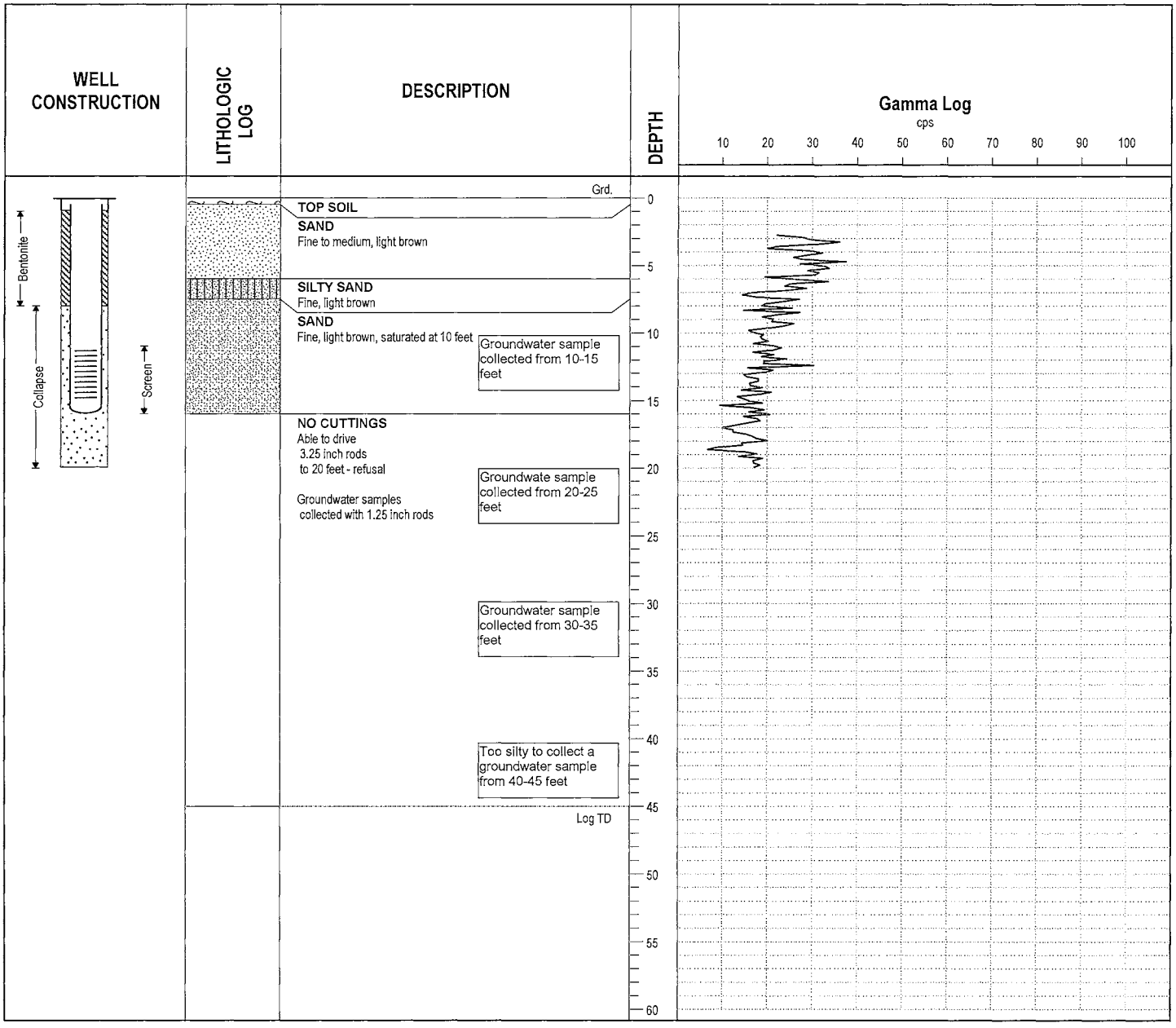
GEOPHYSICAL LOG

BORING/WELL: LD-MW-3

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22
LOCATION DESCRIPTION: Front yard at 6114 Loud Drive

LOGGING DATE: 10-18-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 16 feet
ERNIE#: 35000152



VERTICAL DATUM: USGS
GRD. ELEVATION: 597.873
T.O.C.: 597.291
S.W.L.: 10 feet
CASING: 2-inch I.D. pvc
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Collapse to 11 feet, sand to 8 feet, bentonite to 1 foot

LATITUDE: 44.457531
LONGITUDE: -83.336215
DATUM: MichGeoRef
NORTHING: 437451.609
EASTING: 711750.172

DEQ Remediation and Redevelopment Division

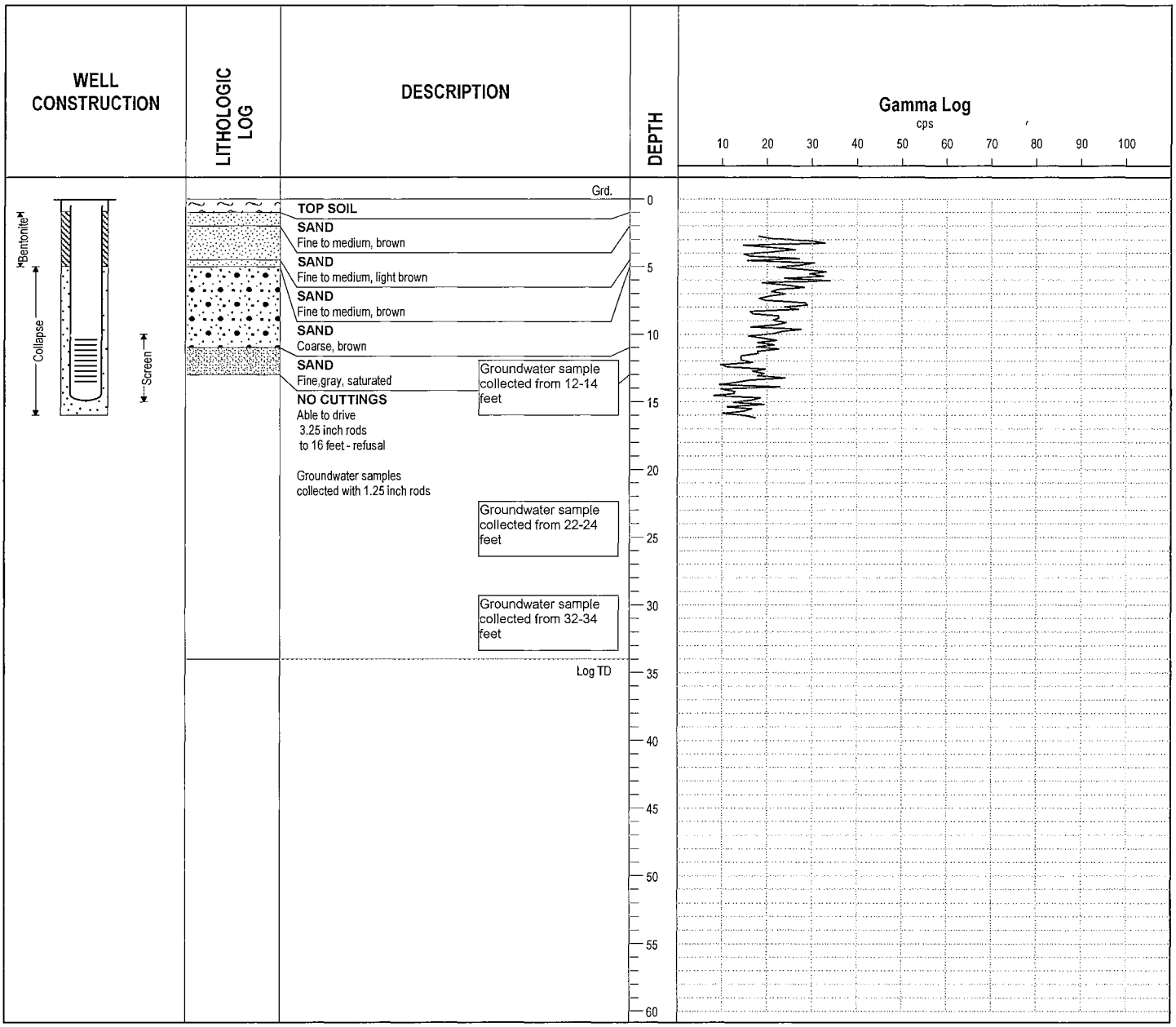
GEOPHYSICAL LOG

BORING/WELL: LD-MW-4

SITE: Wurtsmith - Loud Drive

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22
LOCATION DESCRIPTION: NW corner of Spruce and Stewart Streets

LOGGING DATE: 10-17-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 15 feet
ERNIE#: 35000152



VERTICAL DATUM: USGS
GRD. ELEVATION: 598.824
T.O.C.: 598.736
S.W.L.: 7.5 feet
CASING: 2-inch I.D. pvc
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Collapse to 5 feet, bentonite to 1 foot

LATITUDE: 44.458696
LONGITUDE: -83.330823
DATUM: MichGeoRef
NORTHING: 437594.937
EASTING: 712174.846

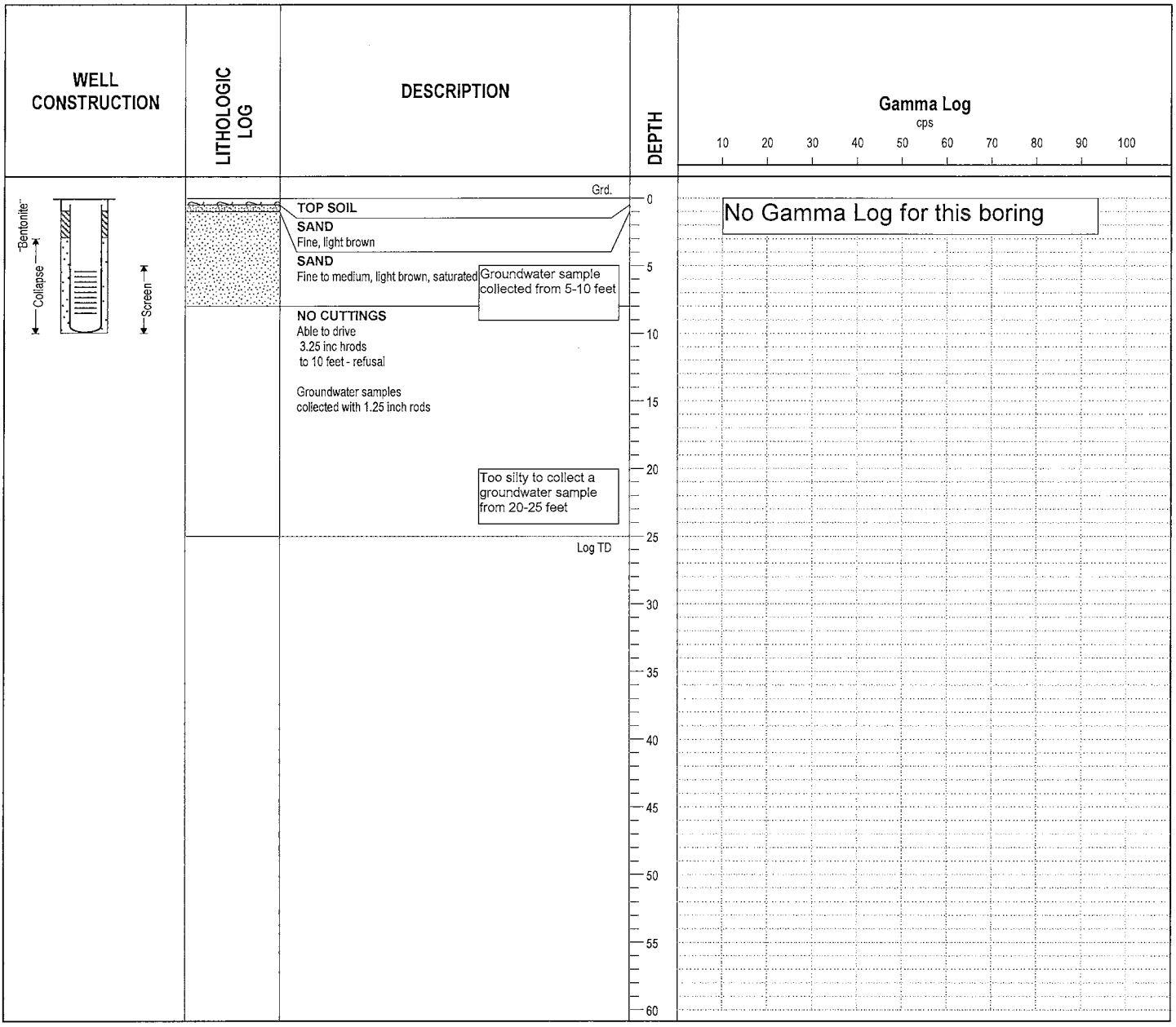
BORING/WELL: LD-MW-5

SITE: Wurtsmith - Loud Drive

GEOPHYSICAL LOG

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 22
LOCATION DESCRIPTION: NW corner of Interlake and Ridge Roads

LOGGING DATE: 10-17-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 10 feet
ERNIE#: 35000152



VERTICAL DATUM: USGS
GRD. ELEVATION:
T.O.C.:
S.W.L.: 2 feet
CASING: 2-inch I.D. pvc
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Collapse to 3 feet, bentonite to 1 foot

LATITUDE: 44.46078
LONGITUDE: -83.325034
DATUM: MichGeoRef
NORTHING: 437841.380
EASTING: 712627.749

APPENDIX B

Wurtsmith-Loud Drive, Iosco County
Site ID #35000152

DEQ Laboratory Results

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

28 November 2016

Work Order: 1610143

Price: $1,840.00

Mike Jury
MDEQ-RRD-SAGINAW BAY
401 Ketchum St., Suite B
Bay City, MI 48708

RE: LOUD DRIVE PCE

I certify that the analyses performed by the MDEQ Environmental Laboratory were conducted by methods approved by the U.S. Environmental Protection Agency and other appropriate regulatory agencies.

Sincerely,

Carol Smith
Laboratory Director (Acting)

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

MDEQ-RRD-SAGINAW BAY
401 Ketchum St., Suite B
Bay City MI, 48708

Project: LOUD DRIVE PCE
Site Code: 35000152
Project Manager: Mike Jury

Reported:
11/28/2016

Analytical Report for Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Qualifier
MW-3 10-15'	1610143-01	Water	10/18/2016	10/20/2016	
MW-3 20-25'	1610143-02	Water	10/18/2016	10/20/2016	
MW-3 30-35'	1610143-03	Water	10/18/2016	10/20/2016	
MW-4 12-14	1610143-04	Water	10/17/2016	10/20/2016	
MW-4 22-24	1610143-05	Water	10/17/2016	10/20/2016	
MW-4 32-34	1610143-06	Water	10/17/2016	10/20/2016	
MW-5 5-10'	1610143-07	Water	10/19/2016	10/20/2016	
B-7 8-13	1610143-08	Water	10/19/2016	10/20/2016	
B-7 18-23	1610143-09	Water	10/19/2016	10/20/2016	
B-7 28-33	1610143-10	Water	10/19/2016	10/20/2016	
B-7 28-33 DUP	1610143-11	Water	10/19/2016	10/20/2016	
B-8 5-10'	1610143-12	Water	10/19/2016	10/20/2016	
B-8 15-20'	1610143-13	Water	10/19/2016	10/20/2016	
B-8 25-30	1610143-14	Water	10/19/2016	10/20/2016	
B-8 35-40	1610143-15	Water	10/19/2016	10/20/2016	
B-8 45-50	1610143-16	Water	10/19/2016	10/20/2016	

Notes and Definitions

X	Methods 8260 & 624 are used to analyze volatile organics that have boiling points below 200 ºC. 2-Methylnaphthalene & naphthalene have boiling points above 200 ºC and are better suited to analysis by methods 8270 & 625 as semivolatile organics.
A11	Result is estimated due to high initial verification standard criteria failure.
A09	Result is estimated due to high recovery of batch quality control.
A06	Result is estimated due to high continuing calibration standard criteria failure.
A05	Result and reporting limit are estimated due to low continuing calibration standard criteria failure.
A04	Result is estimated due to high matrix spike recovery.
A03	Result(s) and reporting limit(s) are estimated due to low matrix spike recovery.
ND	Indicates compound analyzed for but not detected
RL	Reporting Limit
NA	Not Applicable

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3 10-15'

Lab ID: 1610143-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3 10-15'

Lab ID: 1610143-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*98.9 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*101 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*99.5 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

Lab Work Order # 1610143

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3 20-25'

Lab ID: 1610143-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3 20-25'
Lab ID: 1610143-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*96.7 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*98.6 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3 30-35'
Lab ID: 1610143-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3 30-35'

Lab ID: 1610143-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*100 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*101 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*99.4 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-4 12-14

Lab ID: 1610143-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

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ENVIRONMENTAL LABORATORY

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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-4 12-14

Lab ID: 1610143-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*99.2 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-4 22-24

Lab ID: 1610143-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

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ENVIRONMENTAL LABORATORY

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TEL: (517) 335-9800
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Client ID: MW-4 22-24

Lab ID: 1610143-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*101 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*104 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*100 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-4 32-34

Lab ID: 1610143-06

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

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ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-4 32-34

Lab ID: 1610143-06

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*97.6 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*100 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-5 5-10'

Lab ID: 1610143-07

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-5 5-10'

Lab ID: 1610143-07

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*96.9 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*103 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*99.3 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-7 8-13

Lab ID: 1610143-08

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-7 8-13

Lab ID: 1610143-08

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*99.2 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-7 18-23

Lab ID: 1610143-09

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
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ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-7 18-23

Lab ID: 1610143-09

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*99.0 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-7 28-33

Lab ID: 1610143-10

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-7 28-33

Lab ID: 1610143-10

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*99.1 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-7 28-33 DUP

Lab ID: 1610143-11

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/26/16	B6J2610	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	

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Client ID: B-7 28-33 DUP

Lab ID: 1610143-11

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/26/16	B6J2610	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/26/16	B6J2610	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/26/16	B6J2610	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/26/16	B6J2610	8260	
Surrogate: Bromofluorobenzene			*99.0 %*	*85-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Dibromofluoromethane			*103 %*	*82.7-115*		*10/26/16*	B6J2610	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/26/16*	B6J2610	*8260*	

STATE OF MICHIGAN
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ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-8 5-10'

Lab ID: 1610143-12

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/27/16	B6J2701	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	

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Client ID: B-8 5-10'

Lab ID: 1610143-12

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/27/16	B6J2701	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/27/16	B6J2701	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
Surrogate: Bromofluorobenzene			*98.6 %*	*85-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Dibromofluoromethane			*103 %*	*82.7-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Toluene-d8			*100 %*	*85-115*		*10/27/16*	B6J2701	*8260*	

STATE OF MICHIGAN
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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-8 15-20'
Lab ID: 1610143-13

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/27/16	B6J2701	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	

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ENVIRONMENTAL LABORATORY

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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-8 15-20'
Lab ID: 1610143-13

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/27/16	B6J2701	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/27/16	B6J2701	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
Surrogate: Bromofluorobenzene			*98.6 %*	*85-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Dibromofluoromethane			*104 %*	*82.7-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/27/16*	B6J2701	*8260*	

STATE OF MICHIGAN
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ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-8 25-30

Lab ID: 1610143-14

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/27/16	B6J2701	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	

STATE OF MICHIGAN
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TEL: (517) 335-9800
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Client ID: B-8 25-30

Lab ID: 1610143-14

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/27/16	B6J2701	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/27/16	B6J2701	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
Surrogate: Bromofluorobenzene			*99.3 %*	*85-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Dibromofluoromethane			*103 %*	*82.7-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Toluene-d8			*103 %*	*85-115*		*10/27/16*	B6J2701	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-8 35-40

Lab ID: 1610143-15

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/27/16	B6J2701	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	

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ENVIRONMENTAL LABORATORY

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TEL: (517) 335-9800
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Client ID: B-8 35-40

Lab ID: 1610143-15

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/27/16	B6J2701	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/27/16	B6J2701	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
Surrogate: Bromofluorobenzene			*99.1 %*	*85-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Dibromofluoromethane			*103 %*	*82.7-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Toluene-d8			*100 %*	*85-115*		*10/27/16*	B6J2701	*8260*	

STATE OF MICHIGAN
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ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-8 45-50

Lab ID: 1610143-16

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/27/16	B6J2701	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	

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TEL: (517) 335-9800
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Client ID: B-8 45-50

Lab ID: 1610143-16

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/27/16	B6J2701	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/27/16	B6J2701	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/27/16	B6J2701	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/27/16	B6J2701	8260	
Surrogate: Bromofluorobenzene			*99.0 %*	*85-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Dibromofluoromethane			*104 %*	*82.7-115*		*10/27/16*	B6J2701	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/27/16*	B6J2701	*8260*	

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number: 16A0143 (16/0143)

Project Name: **Loud Drive PCE**

Matrix: **WATER**

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000152	17	pincumbej		Jeff Pincumbe
Dept-Division-District	**Index**	**CC Email 2**	**Project Due Date**	**Sample Collector Phone**
DEQ-RRD-Saginaw Bay	44031	shireyb		517-335-6418
State Project Manager	**PCA**	**CC Email 3**		**Contract Firm**
Mike Jury	30740			
State Project Manager Email	**Project**	**Overflow Lab Choice 1**	**Accept Analysis hold time codes**	**Contract Firm Primary Contact**
jurym1	457179			
State Project Manager Phone	**Phase**	**Overflow Lab Choice 2**		**Primary Contact Phone**
989-894-6255	00			

	Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	01	MW-3 10-15'	10-18-16		3	
2	02	MW-3 20-25'	10-18-16		3	
3	03	MW-3 30-35'	10-18-16		3	
4	04	MW-4 12-14	10-17-16		3	
5	05	MW-4 22-24	10-17-16		3	
6	06	MW-4 32-34	10-17-16		2	
7	07	MW-5 5-10'	10-19-16		3	
8	08	B-7 8-13	10-19-16		3	
9	09	B-7 18-23	10-19-16		3	
10	10	B-7 28-33	10-19-16		3	

ORGANIC CHEMISTRY

VOA - Volatile Organic Acidic	
Volatiles - Full List	1 2 3 4 5 6 7 8 9 10
BTEX/MTBE/TMB only	1 2 3 4 5 6 7 8 9 10
Chlorinated only	1 2 3 4 5 6 7 8 9 10
GRO	1 2 3 4 5 6 7 8 9 10
1,4 Dioxane	1 2 3 4 5 6 7 8 9 10
METH - Methane, Ethane, Ethene	
Methane, Ethane, Ethene	1 2 3 4 5 6 7 8 9 10
ON - Pesticides, PCBs	
Pesticides & PCBs	1 2 3 4 5 6 7 8 9 10
Pesticides only	1 2 3 4 5 6 7 8 9 10
PCBs only	1 2 3 4 5 6 7 8 9 10
Toxaphene	1 2 3 4 5 6 7 8 9 10
Chlordane	1 2 3 4 5 6 7 8 9 10
BNA - Base Neutral Acids	
BNAs	1 2 3 4 5 6 7 8 9 10
Benzidines	1 2 3 4 5 6 7 8 9 10
PNAs only	1 2 3 4 5 6 7 8 9 10
BNs only	1 2 3 4 5 6 7 8 9 10
Acids only	1 2 3 4 5 6 7 8 9 10
Organic Specialty Requests	
Library search - Volatiles	1 2 3 4 5 6 7 8 9 10
Library search - SemiVols	1 2 3 4 5 6 7 8 9 10
Finger Print	1 2 3 4 5 6 7 8 9 10
DRO / ORO	1 2 3 4 5 6 7 8 9 10

METALS CHEMISTRY PACKAGES

OpMemo2 - Total	1 2 3 4 5 6 7 8 9 10
OpMemo2 - Dissolved (Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)	1 2 3 4 5 6 7 8 9 10
Michigan10 - Total	1 2 3 4 5 6 7 8 9 10
Michigan10 - Dissolved (As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)	1 2 3 4 5 6 7 8 9 10

MAD - DISSOLVED METALS

Diss - Silver - Ag	1 2 3 4 5 6 7 8 9 10
Diss - Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Diss - Arsenic - As	1 2 3 4 5 6 7 8 9 10
Diss - Boron - B	1 2 3 4 5 6 7 8 9 10
Diss - Barium - Ba	1 2 3 4 5 6 7 8 9 10
Diss - Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Diss - Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Diss - Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Diss - Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Diss - Copper - Cu	1 2 3 4 5 6 7 8 9 10
Diss - Iron - Fe	1 2 3 4 5 6 7 8 9 10
Diss - Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Diss - Lithium - Li	1 2 3 4 5 6 7 8 9 10
Diss - Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Diss - Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Diss - Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Diss - Lead - Pb	1 2 3 4 5 6 7 8 9 10
Diss - Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Diss - Selenium - Se	1 2 3 4 5 6 7 8 9 10
Diss - Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Diss - Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Diss - Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Diss - Uranium - U	1 2 3 4 5 6 7 8 9 10
Diss - Vanadium - V	1 2 3 4 5 6 7 8 9 10
Diss - Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Diss - Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Diss - Potassium - K	1 2 3 4 5 6 7 8 9 10
Diss - Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Diss - Sodium - Na	1 2 3 4 5 6 7 8 9 10
Diss - Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10
MD - Metals Dissolved	
Lab Filtration	1 2 3 4 5 6 7 8 9 10

MA - TOTAL METALS

Silver - Ag	1 2 3 4 5 6 7 8 9 10
Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Arsenic - As	1 2 3 4 5 6 7 8 9 10
Boron - B	1 2 3 4 5 6 7 8 9 10
Barium - Ba	1 2 3 4 5 6 7 8 9 10
Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Copper - Cu	1 2 3 4 5 6 7 8 9 10
Iron - Fe	1 2 3 4 5 6 7 8 9 10
Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Lithium - Li	1 2 3 4 5 6 7 8 9 10
Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Lead - Pb	1 2 3 4 5 6 7 8 9 10
Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Selenium - Se	1 2 3 4 5 6 7 8 9 10
Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Uranium - U	1 2 3 4 5 6 7 8 9 10
Vanadium - V	1 2 3 4 5 6 7 8 9 10
Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Potassium - K	1 2 3 4 5 6 7 8 9 10
Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Sodium - Na	1 2 3 4 5 6 7 8 9 10
Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10
LHG - Low Level Mercury	
Mercury Low Level - Hg	1 2 3 4 5 6 7 8 9 10

GENERAL CHEMISTRY

GB Total Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GB Amenable Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GCN Available Cyanide - CN	1 2 3 4 5 6 7 8 9 10
CA Chlorophyll	1 2 3 4 5 6 7 8 9 10
GN Ortho Phosphate - OP	1 2 3 4 5 6 7 8 9 10
GN Nitrite - NO_2	1 2 3 4 5 6 7 8 9 10
GN Nitrate - NO_3 (Calc.)	1 2 3 4 5 6 7 8 9 10
GN Suspended Solids - SS	1 2 3 4 5 6 7 8 9 10
GN Dissolved Solids - TDS	1 2 3 4 5 6 7 8 9 10
MN Diss Solids - TDS (Calc.)	1 2 3 4 5 6 7 8 9 10
GN Turbidity	1 2 3 4 5 6 7 8 9 10
MN Total Alkalinity	1 2 3 4 5 6 7 8 9 10
MN Bicarb/Carb Alkalinity (Includes Total Alkalinity)	1 2 3 4 5 6 7 8 9 10
MN Chloride - Cl	1 2 3 4 5 6 7 8 9 10
MN Fluoride - F	1 2 3 4 5 6 7 8 9 10
MN Sulfate - SO4	1 2 3 4 5 6 7 8 9 10
MN Chromium 6 - Cr+6	1 2 3 4 5 6 7 8 9 10
MN Conductivity	1 2 3 4 5 6 7 8 9 10
MN pH	1 2 3 4 5 6 7 8 9 10
GA Chem Oxyg Dem - COD	1 2 3 4 5 6 7 8 9 10
GA Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GN Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GA Total Org Carbon - TOC	1 2 3 4 5 6 7 8 9 10
GA Ammonia - NH3	1 2 3 4 5 6 7 8 9 10
GA Nitrate+Nitrite - NO3+NO2	1 2 3 4 5 6 7 8 9 10
GA Kjeldahl Nitrogen - KN	1 2 3 4 5 6 7 8 9 10
GA Total Phosphorus - TP	1 2 3 4 5 6 7 8 9 10

Chain of Custody

	Relinquished by	Received By	Date / Time
Print Name & Org.	Jeff Pincumbe - MDEQ	Michael Jury	1500
Signature:		MICHAEL JURY DEQ-RRD	19 OCT 16
Print Name & Org.	MICHAEL JURY	Melissa Smith	
Signature:	Michael Jury	LaSC	10/20/16 1531
Print Name & Org.			
Signature:			

Analysis Request Sheet

SAFETY INFORMATION

(MUST BE COMPLETED PRIOR TO SAMPLE SUBMITTAL)

Are samples expected to contain cyanide (CN).....	YES ☐	NO ☒
Are samples expected to be flammable.....	YES ☐	NO ☒
Are samples acidic prior to preservation (pH < 2).....	YES ☐	NO ☒
Are samples caustic prior to preservation (pH > 12).....	YES ☐	NO ☒
Are samples expected to be Biohazardous.....	YES ☐	NO ☒
Are samples expected to be reactive with water or acid.....	YES ☐	NO ☒
Are samples expected to be radioactive.....	YES ☐	NO ☒
Are samples expected to contain dioxin.....	YES ☐	NO ☒
Are samples expected to be explosive.....	YES ☐	NO ☒
Were samples pre-preserved.....	YES ☐	NO ☒

List additional suspected sample hazard information below

MAY CONTAIN PFOA OR PFOS

MDEQ PRESERVATIVE TRACKING NUMBERS

VOA - HCL		CA - MgCO3	
VOA - MeOH		MA/MAD - HNO3	
GA - H2SO4		GCN - NaOH	
GB - NaOH		GCN - PbCO3	

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
16 10143	Loud Drive PCE	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000152	17	pincumbej		Jeff Pincumbe
Dept-Division-District	**Index**	**CC Email 2**	**Project Due Date**	**Sample Collector Phone**
DEQ-RRD-Saginaw Bay	44031	shireyb		517-335-6418
State Project Manager	**PCA**	**CC Email 3**		**Contract Firm**
Mike Jury	30740			
State Project Manager Email	**Project**	**Overflow Lab Choice 1**	**Accept Analysis hold time codes**	**Contract Firm Primary Contact**
jurym1	457179			
State Project Manager Phone	**Phase**	**Overflow Lab Choice 2**		**Primary Contact Phone**
989-894-6255	00			

	Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	11	B-7 28-33 DUP	10-19-16		3	
2	12	B-8 5-10'	10-19-16		3	
3	13	B-8 15-20'	10-19-16		3	
4	14	B-8 25-30	10-19-16		3	
5	15	B-8 35-40	10-19-16		3	
6	16	B-8 45-50	10-19-16		3	
7						
8						
9						
10						

ORGANIC CHEMISTRY

VOA - Volatile Organic Acidic	
Volatiles - Full List	1 2 3 4 5 6 7 8 9 10
BTEX/MTBE/TMB only	1 2 3 4 5 6 7 8 9 10
Chlorinated only	1 2 3 4 5 6 7 8 9 10
GRO	1 2 3 4 5 6 7 8 9 10
1,4 Dioxane	1 2 3 4 5 6 7 8 9 10
METH - Methane, Ethane, Ethene	
Methane, Ethane, Ethene	1 2 3 4 5 6 7 8 9 10
ON - Pesticides, PCBs	
Pesticides & PCBs	1 2 3 4 5 6 7 8 9 10
Pesticides only	1 2 3 4 5 6 7 8 9 10
PCBs only	1 2 3 4 5 6 7 8 9 10
Toxaphene	1 2 3 4 5 6 7 8 9 10
Chlordane	1 2 3 4 5 6 7 8 9 10
BNA - Base Neutral Acids	
BNAs	1 2 3 4 5 6 7 8 9 10
Benzidines	1 2 3 4 5 6 7 8 9 10
PNAs only	1 2 3 4 5 6 7 8 9 10
BNs only	1 2 3 4 5 6 7 8 9 10
Acids only	1 2 3 4 5 6 7 8 9 10
Organic Specialty Requests	
Library search - Volatiles	1 2 3 4 5 6 7 8 9 10
Library search - SemiVols	1 2 3 4 5 6 7 8 9 10
Finger Print	1 2 3 4 5 6 7 8 9 10
DRO / ORO	1 2 3 4 5 6 7 8 9 10

METALS CHEMISTRY PACKAGES

OpMemo2 - Total	1 2 3 4 5 6 7 8 9 10
OpMemo2 - Dissolved (Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)	1 2 3 4 5 6 7 8 9 10
Michigan10 - Total	1 2 3 4 5 6 7 8 9 10
Michigan10 - Dissolved (As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)	1 2 3 4 5 6 7 8 9 10

MAD - DISSOLVED METALS

Diss - Silver - Ag	1 2 3 4 5 6 7 8 9 10
Diss - Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Diss - Arsenic - As	1 2 3 4 5 6 7 8 9 10
Diss - Boron - B	1 2 3 4 5 6 7 8 9 10
Diss - Barium - Ba	1 2 3 4 5 6 7 8 9 10
Diss - Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Diss - Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Diss - Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Diss - Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Diss - Copper - Cu	1 2 3 4 5 6 7 8 9 10
Diss - Iron - Fe	1 2 3 4 5 6 7 8 9 10
Diss - Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Diss - Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Diss - Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Diss - Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Diss - Lead - Pb	1 2 3 4 5 6 7 8 9 10
Diss - Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Diss - Selenium - Se	1 2 3 4 5 6 7 8 9 10
Diss - Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Diss - Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Diss - Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Diss - Uranium - U	1 2 3 4 5 6 7 8 9 10
Diss - Vanadium - V	1 2 3 4 5 6 7 8 9 10
Diss - Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Diss - Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Diss - Potassium - K	1 2 3 4 5 6 7 8 9 10
Diss - Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Diss - Sodium - Na	1 2 3 4 5 6 7 8 9 10
Diss - Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10
MD - Metals Dissolved	
Lab Filtration	1 2 3 4 5 6 7 8 9 10

MA - TOTAL METALS

Silver - Ag	1 2 3 4 5 6 7 8 9 10
Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Arsenic - As	1 2 3 4 5 6 7 8 9 10
Boron - B	1 2 3 4 5 6 7 8 9 10
Barium - Ba	1 2 3 4 5 6 7 8 9 10
Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Copper - Cu	1 2 3 4 5 6 7 8 9 10
Iron - Fe	1 2 3 4 5 6 7 8 9 10
Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Lithium - Li	1 2 3 4 5 6 7 8 9 10
Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Lead - Pb	1 2 3 4 5 6 7 8 9 10
Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Selenium - Se	1 2 3 4 5 6 7 8 9 10
Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Uranium - U	1 2 3 4 5 6 7 8 9 10
Vanadium - V	1 2 3 4 5 6 7 8 9 10
Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Potassium - K	1 2 3 4 5 6 7 8 9 10
Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Sodium - Na	1 2 3 4 5 6 7 8 9 10
Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10
LHG - Low Level Mercury	
Mercury Low Level - Hg	1 2 3 4 5 6 7 8 9 10

GENERAL CHEMISTRY

GB	Total Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GB	Amenable Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GCN	Available Cyanide - CN	1 2 3 4 5 6 7 8 9 10
CA	Chlorophyll	1 2 3 4 5 6 7 8 9 10
GN	Ortho Phosphate - OP	1 2 3 4 5 6 7 8 9 10
GN	Nitrite - NO_2	1 2 3 4 5 6 7 8 9 10
GN	Nitrate - NO_3 (Calc.)	1 2 3 4 5 6 7 8 9 10
GN	Suspended Solids - SS	1 2 3 4 5 6 7 8 9 10
GN	Dissolved Solids - TDS	1 2 3 4 5 6 7 8 9 10
MN	Diss Solids - TDS (Calc.)	1 2 3 4 5 6 7 8 9 10
GN	Turbidity	1 2 3 4 5 6 7 8 9 10
MN	Total Alkalinity	1 2 3 4 5 6 7 8 9 10
MN	Bicarb/Carb Alkalinity (Includes Total Alkalinity)	1 2 3 4 5 6 7 8 9 10
MN	Chloride - Cl	1 2 3 4 5 6 7 8 9 10
MN	Fluoride - F	1 2 3 4 5 6 7 8 9 10
MN	Sulfate - SO4	1 2 3 4 5 6 7 8 9 10
MN	Chromium 6 - Cr+6	1 2 3 4 5 6 7 8 9 10
MN	Conductivity	1 2 3 4 5 6 7 8 9 10
MN	pH	1 2 3 4 5 6 7 8 9 10
GA	Chem Oxyg Dem - COD	1 2 3 4 5 6 7 8 9 10
GA	Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GN	Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GA	Total Org Carbon - TOC	1 2 3 4 5 6 7 8 9 10
GA	Ammonia - NH3	1 2 3 4 5 6 7 8 9 10
GA	Nitrate+Nitrite - NO3+NO2	1 2 3 4 5 6 7 8 9 10
GA	Kjeldahl Nitrogen - KN	1 2 3 4 5 6 7 8 9 10
GA	Total Phosphorus - TP	1 2 3 4 5 6 7 8 9 10

Chain of Custody

	Relinquished by	Received By	Date / Time
Print Name & Org.	Jeff Pincumbe - MDEQ	Michael Jury	1500
Signature:		MICHAEL JURY DEQ-RRD	19 OCT 16
Print Name & Org.	MICHAEL JURY	Melissa Smith	
Signature:	Michael Jury		10/20/16 1531
Print Name & Org.			
Signature:			

Analysis Request Sheet

SAFETY INFORMATION

(MUST BE COMPLETED PRIOR TO SAMPLE SUBMITTAL)

Are samples expected to contain cyanide (CN).....	YES ☐	NO ☒
Are samples expected to be flammable.....	YES ☐	NO ☒
Are samples acidic prior to preservation (pH < 2).....	YES ☐	NO ☒
Are samples caustic prior to preservation (pH > 12).....	YES ☐	NO ☒
Are samples expected to be Biohazardous.....	YES ☐	NO ☒
Are samples expected to be reactive with water or acid.....	YES ☐	NO ☒
Are samples expected to be radioactive.....	YES ☐	NO ☒
Are samples expected to contain dioxin.....	YES ☐	NO ☒
Are samples expected to be explosive.....	YES ☐	NO ☒
Were samples pre-preserved.....	YES ☐	NO ☒

List additional suspected sample hazard information below

MAY CONTAIN PFOS OR PFOA

MDEQ PRESERVATIVE TRACKING NUMBERS

VOA - HCL		CA - MgCO3	
VOA - MeOH		MA/MAD - HNO3	
GA - H2SO4		GCN - NaOH	
GB - NaOH		GCN - PbCO3	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

23 November 2016

Work Order: 1610157

Price: $805.00

Mike Jury
MDEQ-RRD-SAGINAW BAY
401 Ketchum St., Suite B
Bay City, MI 48708

RE: LOUD DRIVE PCE

I certify that the analyses performed by the MDEQ Environmental Laboratory were conducted by methods approved by the U.S. Environmental Protection Agency and other appropriate regulatory agencies.

Sincerely,

Carol Smith
Laboratory Director (Acting)

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

MDEQ-RRD-SAGINAW BAY
401 Ketchum St., Suite B
Bay City MI, 48708

Project: LOUD DRIVE PCE
Site Code: 35000152
Project Manager: Mike Jury

Reported:
11/23/2016

Analytical Report for Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Qualifier
MW-1 10-15'	1610157-01	Water	10/20/2016	10/21/2016	
MW-1 20-25'	1610157-02	Water	10/20/2016	10/21/2016	
MW-1 30-35'	1610157-03	Water	10/20/2016	10/21/2016	
MW-1 30-35' DUP	1610157-04	Water	10/20/2016	10/21/2016	
B-4 8-13	1610157-05	Water	10/20/2016	10/21/2016	
B-4 18-23	1610157-06	Water	10/20/2016	10/21/2016	
B-4 28-33	1610157-07	Water	10/20/2016	10/21/2016	

Notes and Definitions

X	Methods 8260 & 624 are used to analyze volatile organics that have boiling points below 200 ºC. 2-Methylnaphthalene & naphthalene have boiling points above 200 ºC and are better suited to analysis by methods 8270 & 625 as semivolatile organics.
T	Reported value is less than the reporting limit (RL). Result is estimated.
A11	Result is estimated due to high initial verification standard criteria failure.
A09	Result is estimated due to high recovery of batch quality control.
A08	Result(s) and reporting limits(s) are estimated due to low recovery of batch QC.
A07	Result(s) and reporting limit(s) are estimated due to poor precision.
A06	Result is estimated due to high continuing calibration standard criteria failure.
A05	Result and reporting limit are estimated due to low continuing calibration standard criteria failure.
A04	Result is estimated due to high matrix spike recovery.
A03	Result(s) and reporting limit(s) are estimated due to low matrix spike recovery.
ND	Indicates compound analyzed for but not detected
RL	Reporting Limit
NA	Not Applicable

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 10-15'

Lab ID: 1610157-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	A05, X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/27/16	B6J2706	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	A05
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	A05
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 10-15'

Lab ID: 1610157-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/27/16	B6J2706	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/27/16	B6J2706	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/27/16	B6J2706	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/27/16	B6J2706	8260	
Surrogate: Bromofluorobenzene			*105 %*	*85-115*		*10/27/16*	B6J2706	*8260*	
Surrogate: Dibromofluoromethane			*98.1 %*	*82.7-115*		*10/27/16*	B6J2706	*8260*	
Surrogate: Toluene-d8			*100 %*	*85-115*		*10/27/16*	B6J2706	*8260*	

STATE OF MICHIGAN
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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 20-25'

Lab ID: 1610157-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A03, A07, X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/28/16	B6J2801	8260	A05
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	

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ENVIRONMENTAL LABORATORY

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Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 20-25'

Lab ID: 1610157-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A03, A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/28/16	B6J2801	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/28/16	B6J2801	8260	A03
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
Surrogate: Bromofluorobenzene			*98.8 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*98.7 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 30-35'
Lab ID: 1610157-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A07, X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/28/16	B6J2801	8260	A05
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 30-35'
Lab ID: 1610157-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/28/16	B6J2801	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/28/16	B6J2801	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-88-3	**Toluene**	**1.0**	1.0	ug/L	1	10/28/16	B6J2801	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
Surrogate: Bromofluorobenzene			*102 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*99.9 %*	*85-115*		*10/28/16*	B6J2801	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 30-35' DUP

Lab ID: 1610157-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A07, X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/28/16	B6J2801	8260	A05
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

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Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 30-35' DUP

Lab ID: 1610157-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/28/16	B6J2801	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/28/16	B6J2801	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-88-3	**Toluene**	**0.94**	1.0	ug/L	1	10/28/16	B6J2801	8260	T
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
Surrogate: Bromofluorobenzene			*102 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*99.8 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	

STATE OF MICHIGAN
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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-4 8-13

Lab ID: 1610157-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A07, X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/28/16	B6J2801	8260	A05
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-4 8-13

Lab ID: 1610157-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/28/16	B6J2801	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/28/16	B6J2801	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-88-3	**Toluene**	**1.2**	1.0	ug/L	1	10/28/16	B6J2801	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
Surrogate: Bromofluorobenzene			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*99.5 %*	*85-115*		*10/28/16*	B6J2801	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-4 18-23

Lab ID: 1610157-06

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A07, X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/28/16	B6J2801	8260	A05
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	

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ENVIRONMENTAL LABORATORY

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TEL: (517) 335-9800
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Client ID: B-4 18-23

Lab ID: 1610157-06

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/28/16	B6J2801	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/28/16	B6J2801	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
Surrogate: Bromofluorobenzene			*102 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*99.7 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	

STATE OF MICHIGAN
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ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: B-4 28-33

Lab ID: 1610157-07

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A07, X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	10/28/16	B6J2801	8260	A05
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	

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Client ID: B-4 28-33

Lab ID: 1610157-07

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	A05
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	10/28/16	B6J2801	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	10/28/16	B6J2801	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
108-88-3	**Toluene**	**1.5**	1.0	ug/L	1	10/28/16	B6J2801	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	10/28/16	B6J2801	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	10/28/16	B6J2801	8260	
Surrogate: Bromofluorobenzene			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*101 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
1610157	Loud Drive PCE	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000152	17	pincumbej		Jeff Pincumbe
Dept-Division-District	**Index**	**CC Email 2**	**Project Due Date**	**Sample Collector Phone**
DEQ-RRD-Saginaw Bay	44031	shireyb		517-335-6418
State Project Manager	**PCA**	**CC Email 3**		**Contract Firm**
Mike Jury	30740			
State Project Manager Email	**Project**	**Overflow Lab Choice 1**	**Accept Analysis hold time codes**	**Contract Firm Primary Contact**
jurym1	457179			
State Project Manager Phone	**Phase**	**Overflow Lab Choice 2**		**Primary Contact Phone**
989-894-6255	00			

	Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	01	MW-1 10-15'	10-20-16			
2	02	MW-1 20-25'				
3	03	MW-1 30-35'			2	1 BROKE
4	04	MW-1 30-35 DUP				
5	05	B-4 8-13				
6	06	B-4 18-23				
7	07	B-4 28-33				
8						
9						
10						

ORGANIC CHEMISTRY

VOA - Volatile Organic Acidic
Volatiles - Full List 1 2 3 4 5 6 7 8 9 10
BTEX/MTBE/TMB only 1 2 3 4 5 6 7 8 9 10
Chlorinated only 1 2 3 4 5 6 7 8 9 10
GRO 1 2 3 4 5 6 7 8 9 10
1,4 Dioxane 1 2 3 4 5 6 7 8 9 10

METH - Methane, Ethane, Ethene
Methane, Ethane, Ethene 1 2 3 4 5 6 7 8 9 10

ON - Pesticides, PCBs
Pesticides & PCBs 1 2 3 4 5 6 7 8 9 10
Pesticides only 1 2 3 4 5 6 7 8 9 10
PCBs only 1 2 3 4 5 6 7 8 9 10
Toxaphene 1 2 3 4 5 6 7 8 9 10
Chlordane 1 2 3 4 5 6 7 8 9 10

BNA - Base Neutral Acids
BNAs 1 2 3 4 5 6 7 8 9 10
Benzidines 1 2 3 4 5 6 7 8 9 10
PNAs only 1 2 3 4 5 6 7 8 9 10
BNs only 1 2 3 4 5 6 7 8 9 10
Acids only 1 2 3 4 5 6 7 8 9 10

Organic Specialty Requests
Library search - Volatiles 1 2 3 4 5 6 7 8 9 10
Library search - SemiVols 1 2 3 4 5 6 7 8 9 10
Finger Print 1 2 3 4 5 6 7 8 9 10
DRO / ORO 1 2 3 4 5 6 7 8 9 10

METALS CHEMISTRY PACKAGES

OpMemo2 - Total 1 2 3 4 5 6 7 8 9 10
OpMemo2 - Dissolved 1 2 3 4 5 6 7 8 9 10
(Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)
Michigan10 - Total 1 2 3 4 5 6 7 8 9 10
Michigan10 - Dissolved 1 2 3 4 5 6 7 8 9 10
(As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)

MAD - DISSOLVED METALS

Diss - Silver - Ag 1 2 3 4 5 6 7 8 9 10
Diss - Aluminum - Al 1 2 3 4 5 6 7 8 9 10
Diss - Arsenic - As 1 2 3 4 5 6 7 8 9 10
Diss - Boron - B 1 2 3 4 5 6 7 8 9 10
Diss - Barium - Ba 1 2 3 4 5 6 7 8 9 10
Diss - Beryllium - Be 1 2 3 4 5 6 7 8 9 10
Diss - Cadmium - Cd 1 2 3 4 5 6 7 8 9 10
Diss - Cobalt - Co 1 2 3 4 5 6 7 8 9 10
Diss - Chromium - Cr 1 2 3 4 5 6 7 8 9 10
Diss - Copper - Cu 1 2 3 4 5 6 7 8 9 10
Diss - Iron - Fe 1 2 3 4 5 6 7 8 9 10
Diss - Mercury - Hg 1 2 3 4 5 6 7 8 9 10
Diss - Lithium - Li 1 2 3 4 5 6 7 8 9 10
Diss - Manganese - Mn 1 2 3 4 5 6 7 8 9 10
Diss - Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10
Diss - Nickel - Ni 1 2 3 4 5 6 7 8 9 10
Diss - Lead - Pb 1 2 3 4 5 6 7 8 9 10
Diss - Antimony - Sb 1 2 3 4 5 6 7 8 9 10
Diss - Selenium - Se 1 2 3 4 5 6 7 8 9 10
Diss - Strontium - Sr 1 2 3 4 5 6 7 8 9 10
Diss - Titanium - Ti 1 2 3 4 5 6 7 8 9 10
Diss - Thallium - Tl 1 2 3 4 5 6 7 8 9 10
Diss - Uranium - U 1 2 3 4 5 6 7 8 9 10
Diss - Vanadium - V 1 2 3 4 5 6 7 8 9 10
Diss - Zinc - Zn 1 2 3 4 5 6 7 8 9 10
Diss - Calcium - Ca 1 2 3 4 5 6 7 8 9 10
Diss - Potassium - K 1 2 3 4 5 6 7 8 9 10
Diss - Magnesium - Mg 1 2 3 4 5 6 7 8 9 10
Diss - Sodium - Na 1 2 3 4 5 6 7 8 9 10
Diss - Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10

MD - Metals Dissolved
Lab Filtration 1 2 3 4 5 6 7 8 9 10

MA - TOTAL METALS

Silver - Ag 1 2 3 4 5 6 7 8 9 10
Aluminum - Al 1 2 3 4 5 6 7 8 9 10
Arsenic - As 1 2 3 4 5 6 7 8 9 10
Boron - B 1 2 3 4 5 6 7 8 9 10
Barium - Ba 1 2 3 4 5 6 7 8 9 10
Beryllium - Be 1 2 3 4 5 6 7 8 9 10
Cadmium - Cd 1 2 3 4 5 6 7 8 9 10
Cobalt - Co 1 2 3 4 5 6 7 8 9 10
Chromium - Cr 1 2 3 4 5 6 7 8 9 10
Copper - Cu 1 2 3 4 5 6 7 8 9 10
Iron - Fe 1 2 3 4 5 6 7 8 9 10
Mercury - Hg 1 2 3 4 5 6 7 8 9 10
Lithium - Li 1 2 3 4 5 6 7 8 9 10
Manganese - Mn 1 2 3 4 5 6 7 8 9 10
Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10
Nickel - Ni 1 2 3 4 5 6 7 8 9 10
Lead - Pb 1 2 3 4 5 6 7 8 9 10
Antimony - Sb 1 2 3 4 5 6 7 8 9 10
Selenium - Se 1 2 3 4 5 6 7 8 9 10
Strontium - Sr 1 2 3 4 5 6 7 8 9 10
Titanium - Ti 1 2 3 4 5 6 7 8 9 10
Thallium - Tl 1 2 3 4 5 6 7 8 9 10
Uranium - U 1 2 3 4 5 6 7 8 9 10
Vanadium - V 1 2 3 4 5 6 7 8 9 10
Zinc - Zn 1 2 3 4 5 6 7 8 9 10
Calcium - Ca 1 2 3 4 5 6 7 8 9 10
Potassium - K 1 2 3 4 5 6 7 8 9 10
Magnesium - Mg 1 2 3 4 5 6 7 8 9 10
Sodium - Na 1 2 3 4 5 6 7 8 9 10
Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10

LHG - Low Level Mercury
Mercury Low Level - Hg 1 2 3 4 5 6 7 8 9 10

GENERAL CHEMISTRY

GB Total Cyanide - CN 1 2 3 4 5 6 7 8 9 10
GB Amenable Cyanide - CN 1 2 3 4 5 6 7 8 9 10
GCN Available Cyanide - CN 1 2 3 4 5 6 7 8 9 10
CA Chlorophyll 1 2 3 4 5 6 7 8 9 10
GN Ortho Phosphate - OP 1 2 3 4 5 6 7 8 9 10
GN Nitrite - NO_2 1 2 3 4 5 6 7 8 9 10
GN Nitrate - NO_3 (Calc.) 1 2 3 4 5 6 7 8 9 10
GN Suspended Solids - SS 1 2 3 4 5 6 7 8 9 10
GN Dissolved Solids - TDS 1 2 3 4 5 6 7 8 9 10
MN Diss Solids - TDS (Calc.) 1 2 3 4 5 6 7 8 9 10
GN Turbidity 1 2 3 4 5 6 7 8 9 10
MN Total Alkalinity 1 2 3 4 5 6 7 8 9 10
MN Bicarb/Carb Alkalinity (Includes Total Alkalinity) 1 2 3 4 5 6 7 8 9 10
MN Chloride - Cl 1 2 3 4 5 6 7 8 9 10
MN Fluoride - F 1 2 3 4 5 6 7 8 9 10
MN Sulfate - SO4 1 2 3 4 5 6 7 8 9 10
MN Chromium 6 - Cr+6 1 2 3 4 5 6 7 8 9 10
MN Conductivity 1 2 3 4 5 6 7 8 9 10
MN pH 1 2 3 4 5 6 7 8 9 10
GA Chem Oxyg Dem - COD 1 2 3 4 5 6 7 8 9 10
GA Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved) 1 2 3 4 5 6 7 8 9 10
GN Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved) 1 2 3 4 5 6 7 8 9 10
GA Total Org Carbon - TOC 1 2 3 4 5 6 7 8 9 10
GA Ammonia - NH3 1 2 3 4 5 6 7 8 9 10
GA Nitrate+Nitrite - NO3+NO2 1 2 3 4 5 6 7 8 9 10
GA Kjeldahl Nitrogen - KN 1 2 3 4 5 6 7 8 9 10
GA Total Phosphorus - TP 1 2 3 4 5 6 7 8 9 10

Chain of Custody

	Relinquished by	Received By	Date / Time
Print Name & Org.	Jeff Pincumbe - MDEQ	Melissa Smith	
Signature:			10/21/16 1521
Print Name & Org.			
Signature:			
Print Name & Org.			
Signature:			

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

06 December 2016

Work Order: 1611132

Price: $1,225.00

Mike Jury
MDEQ-RRD-SAGINAW BAY
401 Ketchum St., Suite B
Bay City, MI 48708

RE: LOUD DRIVE PCE

I certify that the analyses performed by the MDEQ Environmental Laboratory were conducted by methods approved by the U.S. Environmental Protection Agency and other appropriate regulatory agencies.

Sincerely,

Carol Smith
Laboratory Director (Acting)

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MDEQ-RRD-SAGINAW BAY
401 Ketchum St., Suite B
Bay City MI, 48708

Project: LOUD DRIVE PCE
Site Code: 35000152
Project Manager: Mike Jury

Reported:
12/06/2016

Analytical Report for Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Qualifier
MW-1	1611132-01	Water	11/14/2016	11/15/2016	
MW-3	1611132-02	Water	11/14/2016	11/15/2016	
MW-3 DUP	1611132-03	Water	11/14/2016	11/15/2016	
MW-4	1611132-04	Water	11/14/2016	11/15/2016	
MW-5	1611132-05	Water	11/14/2016	11/15/2016	

Notes and Definitions

Y28	1,4-dioxane analysis is performed using selective ion monitoring (SIM). Results reported below 5 ug/L (aqueous) or 1000 ug/Kg (solids) are estimated.
X	Methods 8260 & 624 are used to analyze volatile organics that have boiling points below 200 ºC. 2-Methylnaphthalene & naphthalene have boiling points above 200 ºC and are better suited to analysis by methods 8270 & 625 as semivolatile organics.
A11	Result is estimated due to high initial verification standard criteria failure.
A09	Result is estimated due to high recovery of batch quality control.
A06	Result is estimated due to high continuing calibration standard criteria failure.
A05	Result and reporting limit are estimated due to low continuing calibration standard criteria failure.
A04	Result is estimated due to high matrix spike recovery.
A03	Result(s) and reporting limit(s) are estimated due to low matrix spike recovery.
ND	Indicates compound analyzed for but not detected
RL	Reporting Limit
NA	Not Applicable

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TEL: (517) 335-9800
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Client ID: MW-1

Lab ID: 1611132-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/18/16	B6K1718	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	

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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1

Lab ID: 1611132-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/18/16	B6K1718	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/18/16	B6K1718	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	A05
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
Surrogate: Bromofluorobenzene			*99.2 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*104 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*98.7 %*	*85-115*		*11/18/16*	B6K1718	*8260*	

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Client ID: MW-1

Lab ID: 1611132-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Dioxane									
123-91-1	1,4-dioxane	ND	1.0	ug/L	1	11/21/16	B6K2217	8260 Modified	Y28

Lab Work Order # 1611132

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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3

Lab ID: 1611132-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/18/16	B6K1718	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3

Lab ID: 1611132-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/18/16	B6K1718	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/18/16	B6K1718	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	A05
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
Surrogate: Bromofluorobenzene			*100 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*96.1 %*	*85-115*		*11/18/16*	B6K1718	*8260*	

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ENVIRONMENTAL LABORATORY

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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3

Lab ID: 1611132-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Dioxane									
123-91-1	1,4-dioxane	ND	1.0	ug/L	1	11/21/16	B6K2217	8260 Modified	Y28

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TEL: (517) 335-9800
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Client ID: MW-3 DUP

Lab ID: 1611132-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/18/16	B6K1718	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	

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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-3 DUP

Lab ID: 1611132-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/18/16	B6K1718	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/18/16	B6K1718	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	A05
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
Surrogate: Bromofluorobenzene			*97.1 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*101 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*97.4 %*	*85-115*		*11/18/16*	B6K1718	*8260*	

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Client ID: MW-3 DUP

Lab ID: 1611132-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Dioxane									
123-91-1	1,4-dioxane	ND	1.0	ug/L	1	11/21/16	B6K2217	8260 Modified	Y28

STATE OF MICHIGAN
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P.O. Box 30270
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TEL: (517) 335-9800
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Client ID: MW-4

Lab ID: 1611132-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/18/16	B6K1718	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	

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P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-4

Lab ID: 1611132-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/18/16	B6K1718	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/18/16	B6K1718	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	A05
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
Surrogate: Bromofluorobenzene			*102 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*104 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*99.9 %*	*85-115*		*11/18/16*	B6K1718	*8260*	

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL LABORATORY

P.O. Box 30270
Lansing, MI 48909
TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-4

Lab ID: 1611132-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Dioxane									
123-91-1	1,4-dioxane	ND	1.0	ug/L	1	11/21/16	B6K2217	8260 Modified	Y28

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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-5

Lab ID: 1611132-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/18/16	B6K1718	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	

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Client ID: MW-5

Lab ID: 1611132-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/18/16	B6K1718	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/18/16	B6K1718	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/18/16	B6K1718	8260	A05
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/18/16	B6K1718	8260	
Surrogate: Bromofluorobenzene			*95.3 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*104 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*98.6 %*	*85-115*		*11/18/16*	B6K1718	*8260*	

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CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Dioxane									
123-91-1	1,4-dioxane	ND	1.0	ug/L	1	11/21/16	B6K2217	8260 Modified	Y28

Lab Work Order # 1611132

DEQ

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
16.11132	Loud Drive PCE	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000152	17	pincumbej		Jeff Pincumbe
Dept-Division-District	**Index**	**CC Email 2**	**Project Due Date**	**Sample Collector Phone**
DEQ-RRD-Saginwa-bay	44031	shireyb		517-335-6418
State Project Manager	**PCA**	**CC Email 3**		**Contract Firm**
Mike Jury	30740			
State Project Manager Email	**Project**	**Overflow Lab Choice 1**	**Accept Analysis hold time codes**	**Contract Firm Primary Contact**
jurym1	457179			
State Project Manager Phone	**Phase**	**Overflow Lab Choice 2**		**Primary Contact Phone**
989-894-6255	00			

	Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1	01	MW-1	11-14-16			
2	02	MW-3	11-14-16			
3	03	MW-3 Dup	11-14-16			
4	04	MW-4	11-14-16			
5	05	MW-5	11-14-16			
6						
7						
8						
9						
10						

ORGANIC CHEMISTRY

VOA - Volatile Organic Acidic	
Volatiles - Full List	1 2 3 4 5 6 7 8 9 10
BTEX/MTBE/TMB only	1 2 3 4 5 6 7 8 9 10
Chlorinated only	1 2 3 4 5 6 7 8 9 10
GRO	1 2 3 4 5 6 7 8 9 10
1,4 Dioxane	1 2 3 4 5 6 7 8 9 10
METH - Methane, Ethane, Ethene	
Methane, Ethane, Ethene	1 2 3 4 5 6 7 8 9 10
ON - Pesticides, PCBs	
Pesticides & PCBs	1 2 3 4 5 6 7 8 9 10
Pesticides only	1 2 3 4 5 6 7 8 9 10
PCBs only	1 2 3 4 5 6 7 8 9 10
Toxaphene	1 2 3 4 5 6 7 8 9 10
Chlordane	1 2 3 4 5 6 7 8 9 10
BNA - Base Neutral Acids	
BNAs	1 2 3 4 5 6 7 8 9 10
Benzidines	1 2 3 4 5 6 7 8 9 10
PNAs only	1 2 3 4 5 6 7 8 9 10
BNs only	1 2 3 4 5 6 7 8 9 10
Acids only	1 2 3 4 5 6 7 8 9 10
Organic Specialty Requests	
Library search - Volatiles	1 2 3 4 5 6 7 8 9 10
Library search - SemiVols	1 2 3 4 5 6 7 8 9 10
Finger Print	1 2 3 4 5 6 7 8 9 10
DRO / ORO	1 2 3 4 5 6 7 8 9 10

METALS CHEMISTRY PACKAGES

OpMemo2 - Total	1 2 3 4 5 6 7 8 9 10
OpMemo2 - Dissolved (Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)	1 2 3 4 5 6 7 8 9 10
Michigan10 - Total	1 2 3 4 5 6 7 8 9 10
Michigan10 - Dissolved (As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)	1 2 3 4 5 6 7 8 9 10

MAD - DISSOLVED METALS

Diss - Silver - Ag	1 2 3 4 5 6 7 8 9 10
Diss - Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Diss - Arsenic - As	1 2 3 4 5 6 7 8 9 10
Diss - Boron - B	1 2 3 4 5 6 7 8 9 10
Diss - Barium - Ba	1 2 3 4 5 6 7 8 9 10
Diss - Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Diss - Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Diss - Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Diss - Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Diss - Copper - Cu	1 2 3 4 5 6 7 8 9 10
Diss - Iron - Fe	1 2 3 4 5 6 7 8 9 10
Diss - Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Diss - Lithium - Li	1 2 3 4 5 6 7 8 9 10
Diss - Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Diss - Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Diss - Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Diss - Lead - Pb	1 2 3 4 5 6 7 8 9 10
Diss - Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Diss - Selenium - Se	1 2 3 4 5 6 7 8 9 10
Diss - Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Diss - Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Diss - Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Diss - Uranium - U	1 2 3 4 5 6 7 8 9 10
Diss - Vanadium - V	1 2 3 4 5 6 7 8 9 10
Diss - Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Diss - Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Diss - Potassium - K	1 2 3 4 5 6 7 8 9 10
Diss - Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Diss - Sodium - Na	1 2 3 4 5 6 7 8 9 10
Diss - Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10
MD - Metals Dissolved	
Lab Filtration	1 2 3 4 5 6 7 8 9 10

MA - TOTAL METALS

Silver - Ag	1 2 3 4 5 6 7 8 9 10
Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Arsenic - As	1 2 3 4 5 6 7 8 9 10
Boron - B	1 2 3 4 5 6 7 8 9 10
Barium - Ba	1 2 3 4 5 6 7 8 9 10
Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Copper - Cu	1 2 3 4 5 6 7 8 9 10
Iron - Fe	1 2 3 4 5 6 7 8 9 10
Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Lithium - Li	1 2 3 4 5 6 7 8 9 10
Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Lead - Pb	1 2 3 4 5 6 7 8 9 10
Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Selenium - Se	1 2 3 4 5 6 7 8 9 10
Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Uranium - U	1 2 3 4 5 6 7 8 9 10
Vanadium - V	1 2 3 4 5 6 7 8 9 10
Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Potassium - K	1 2 3 4 5 6 7 8 9 10
Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Sodium - Na	1 2 3 4 5 6 7 8 9 10
Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10
LHG - Low Level Mercury	
Mercury Low Level - Hg	1 2 3 4 5 6 7 8 9 10

GENERAL CHEMISTRY

GB Total Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GB Amenable Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GCN Available Cyanide - CN	1 2 3 4 5 6 7 8 9 10
CA Chlorophyll	1 2 3 4 5 6 7 8 9 10
GN Ortho Phosphate - OP	1 2 3 4 5 6 7 8 9 10
GN Nitrite - NO_2	1 2 3 4 5 6 7 8 9 10
GN Nitrate - NO_3 (Calc.)	1 2 3 4 5 6 7 8 9 10
GN Suspended Solids - SS	1 2 3 4 5 6 7 8 9 10
GN Dissolved Solids - TDS	1 2 3 4 5 6 7 8 9 10
MN Diss Solids - TDS (Calc.)	1 2 3 4 5 6 7 8 9 10
GN Turbidity	1 2 3 4 5 6 7 8 9 10
MN Total Alkalinity	1 2 3 4 5 6 7 8 9 10
MN Bicarb/Carb Alkalinity (includes Total Alkalinity)	1 2 3 4 5 6 7 8 9 10
MN Chloride - Cl	1 2 3 4 5 6 7 8 9 10
MN Fluoride - F	1 2 3 4 5 6 7 8 9 10
MN Sulfate - SO4	1 2 3 4 5 6 7 8 9 10
MN Chromium 6 - Cr+6	1 2 3 4 5 6 7 8 9 10
MN Conductivity	1 2 3 4 5 6 7 8 9 10
MN pH	1 2 3 4 5 6 7 8 9 10
GA Chem Oxyg Dem - COD	1 2 3 4 5 6 7 8 9 10
GA Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GN Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GA Total Org Carbon - TOC	1 2 3 4 5 6 7 8 9 10
GA Ammonia - NH3	1 2 3 4 5 6 7 8 9 10
GA Nitrate+Nitrite - NO3+NO2	1 2 3 4 5 6 7 8 9 10
GA Kjeldahl Nitrogen - KN	1 2 3 4 5 6 7 8 9 10
GA Total Phosphorus - TP	1 2 3 4 5 6 7 8 9 10

Chain of Custody

	Relinquished by	Received By	Date / Time
Print Name & Org.	Jeff Pincumbe - MDEQ		
Signature:			11/15/16 1405
Print Name & Org.			
Signature:			
Print Name & Org.			
Signature:			

APPENDIX C

Wurtsmith-Loud Drive, Iosco County
Site ID #35000152

Test America Laboratory Results

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-22916-1
Client Project/Site: Wurtsmith - 3500058

For:
Michigan Dept. of Environmental Quality
Constitution Hall 3rd floor SW
525 W. Allegan Street
Lansing, Michigan 48909

Attn: Bob Delaney

Kris Brooks

Authorized for release by:
11/8/2016 8:51:59 PM

Kris Brooks, Project Manager II
(330)966-9790
kris.brooks@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-22916-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: Michigan Dept. of Environmental Quality

Project: Wurtsmith - 3500058

Report Number: 320-22916-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 10/21/2016 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

PERFLUORINATED HYDROCARBONS

Samples B-7 28'-33' (320-22916-1), MW5 5'-10' (320-22916-2), MW4 22'-24' (320-22916-3), B-8 25'-30' (320-22916-4), MW4 12'-14' (320-22916-5), B-8 5'-10' (320-22916-6), B-8 15'-20' (320-22916-7), B-8 35'-40' (320-22916-8), B-8 45'-50' (320-22916-9), B-7 8'-13' (320-22916-10), B-7 18'-23' (320-22916-11), B-7 28'-33' DUP (320-22916-12), MW-3 10'-15' (320-22916-13), MW-3 20'-25' (320-22916-14) and MW-3 30'-35' (320-22916-15) were analyzed for Perfluorinated Hydrocarbons in accordance with SOP WS-OC-0025. The samples were prepared on 10/24/2016 and analyzed on 10/26/2016, 10/27/2016 and 11/02/2016.

Perfluorobutanoic acid (PFBA) and Perfluorotetradecanoic acid (PFTeA) were detected in method blank MB 320-134076/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Due to the excessive amount of sediment in the sample bottles, the aqueous portion of these samples was decanted to new bottles prior to spiking and the extraction: B-7 28'-33' (320-22916-1), MW5 5'-10' (320-22916-2), B-8 25'-30' (320-22916-4), MW4 12'-14' (320-22916-5), B-8 15'-20' (320-22916-7), B-8 35'-40' (320-22916-8), B-8 45'-50' (320-22916-9), B-7 18'-23' (320-22916-11), B-7 28'-33' DUP (320-22916-12), MW-3 20'-25' (320-22916-14) and MW-3 30'-35' (320-22916-15).

Job ID: 320-22916-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

The following samples were re-prepped outside of holding time. Samples were originally prepped within holding time but as-per client request, after the original extraction, samples were re-fortified with add-on compounds including 6:2 and 8:2 FTS analytes: B-7 28'-33' (320-22916-1), MW5 5'-10' (320-22916-2), MW4 22'-24' (320-22916-3), B-8 25'-30' (320-22916-4), MW4 12'-14' (320-22916-5), B-8 5'-10' (320-22916-6), B-8 15'-20' (320-22916-7), B-8 35'-40' (320-22916-8), B-8 45'-50' (320-22916-9), B-7 8'-13' (320-22916-10), B-7 18'-23' (320-22916-11), B-7 28'-33' DUP (320-22916-12), MW-3 10'-15' (320-22916-13), MW-3 20'-25' (320-22916-14) and MW-3 30'-35' (320-22916-15).

The Isotope Dilution Analyte (IDA) recovery associated with the following samples were below the method recommended limit: B-7 28'-33' (320-22916-1), MW5 5'-10' (320-22916-2), MW4 22'-24' (320-22916-3), B-8 25'-30' (320-22916-4), MW4 12'-14' (320-22916-5), B-8 5'-10' (320-22916-6), B-8 15'-20' (320-22916-7), B-8 35'-40' (320-22916-8), B-8 45'-50' (320-22916-9), B-7 8'-13' (320-22916-10), B-7 18'-23' (320-22916-11), B-7 28'-33' DUP (320-22916-12), MW-3 10'-15' (320-22916-13), MW-3 20'-25' (320-22916-14) and MW-3 30'-35' (320-22916-15). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. All detection limits are below the lower calibration.

The results for Perfluorotetradecanoic acid (PFTeA) in the following samples may be bias high due to a co-extracted interference: B-7 28'-33' (320-22916-1), MW5 5'-10' (320-22916-2), MW4 22'-24' (320-22916-3), B-8 25'-30' (320-22916-4), MW4 12'-14' (320-22916-5), B-8 5'-10' (320-22916-6), B-8 15'-20' (320-22916-7), B-8 35'-40' (320-22916-8), B-8 45'-50' (320-22916-9), B-7 8'-13' (320-22916-10), B-7 18'-23' (320-22916-11), B-7 28'-33' DUP (320-22916-12), MW-3 10'-15' (320-22916-13), MW-3 20'-25' (320-22916-14), MW-3 30'-35' (320-22916-15) and (MB 320-134076/1-A).

The client added the analytes M2-6:2FTS and M2-8:2FTS to the job after the samples were prep. The samples were re-fortified as follow. The samples in the vial were recombined with the archived samples. The M2-6:2FTS and M2-8:2FTS Isotope Dilution Analytes (IDA) were spiked into all extracts. The laboratory control sample (LCS) standard mix spiked into the LCS sample. The samples were blown back down to final volume: B-7 28'-33' (320-22916-1), MW5 5'-10' (320-22916-2), MW4 22'-24' (320-22916-3), B-8 25'-30' (320-22916-4), MW4 12'-14' (320-22916-5), B-8 5'-10' (320-22916-6), B-8 15'-20' (320-22916-7), B-8 35'-40' (320-22916-8), B-8 45'-50' (320-22916-9), B-7 8'-13' (320-22916-10), B-7 18'-23' (320-22916-11), B-7 28'-33' DUP (320-22916-12), MW-3 10'-15' (320-22916-13), MW-3 20'-25' (320-22916-14), MW-3 30'-35' (320-22916-15), (LCS 320-135548/2-A), (LCSD 320-135548/3-A) and (MB 320-135548/1-A).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Client Sample ID: B-7 28'-33' — Lab Sample ID: 320-22916-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.77	J B	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.1	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.41	J	2.0	0.12	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW5 5'-10' — Lab Sample ID: 320-22916-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.1	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.5	J	1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.9		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.3	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.74	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	9.8		1.9	0.87	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	8.2		1.9	0.82	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW4 22'-24' — Lab Sample ID: 320-22916-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.58	J B	1.7	0.39	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.3	J B	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.49	J	1.7	0.10	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.4		1.7	0.78	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-8 25'-30' — Lab Sample ID: 320-22916-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.6	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.1		1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.7		1.9	0.93	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.4		1.9	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0		1.9	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.96	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.66	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	11		1.9	0.87	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.8		1.9	0.82	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW4 12'-14' — Lab Sample ID: 320-22916-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	11	B	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.4	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.37	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	5.3		1.9	0.89	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-8 5'-10' — Lab Sample ID: 320-22916-6

This Detection Summary does not include radiochemical test results.

Client Sample ID: B-8 5'-10' (Continued) — Lab Sample ID: 320-22916-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	4.7	B	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.8		2.0	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.5	J	2.0	1.3	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.1	J	2.0	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.3	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.69	J	2.0	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	15		2.0	0.90	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.6		2.0	0.86	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-8 15'-20' — Lab Sample ID: 320-22916-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.5	J B	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.3		1.9	0.72	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.5		1.9	0.95	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.2		1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.9	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.3	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.51	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	12		1.9	0.88	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.1		1.9	0.83	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-8 35'-40' — Lab Sample ID: 320-22916-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.1	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.1		1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.9		1.9	0.94	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.2		1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.6		1.9	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.7	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.83	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	8.7		1.9	0.87	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.6		1.9	0.83	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-8 45'-50' — Lab Sample ID: 320-22916-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.5	J B	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		1.9	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.0	J	1.9	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.7	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.22	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.6		1.9	0.88	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J	1.9	0.84	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-7 8'-13' — Lab Sample ID: 320-22916-10

This Detection Summary does not include radiochemical test results.

Client Sample ID: B-7 8'-13' (Continued) — Lab Sample ID: 320-22916-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	7.2	B	1.7	0.39	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.1		1.7	0.64	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.1		1.7	1.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	6.2		1.7	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.9		1.7	0.67	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.2		1.7	0.68	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.6	J B	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.24	J	1.7	0.10	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.2		1.7	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.6		1.7	0.74	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-7 18'-23' — Lab Sample ID: 320-22916-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.1	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.7	J	1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.4		1.9	0.94	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.1		1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.3	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.76	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.0		1.9	0.87	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.4		1.9	0.83	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-7 28'-33' DUP — Lab Sample ID: 320-22916-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.99	J B	1.9	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.5	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.41	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 10'-15' — Lab Sample ID: 320-22916-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.5	B	1.7	0.40	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.4		1.7	0.65	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	13		1.7	1.1	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	6.4		1.7	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.9		1.7	0.68	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.0		1.7	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.90	J	1.7	0.57	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.9		1.7	0.38	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.7	B	1.7	0.17	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.60	J	1.7	0.11	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.9		1.7	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.9		1.7	0.76	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 20'-25' — Lab Sample ID: 320-22916-14

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-3 20'-25' (Continued)

Lab Sample ID: 320-22916-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.0	B	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.1		1.9	0.72	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.1		1.9	0.95	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.6		1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.0		1.9	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.42	J	1.9	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.1	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.39	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.8		1.9	0.88	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.8		1.9	0.83	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 30'-35'

Lab Sample ID: 320-22916-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.1	B	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.8		2.0	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.0		2.0	0.98	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.0		2.0	0.78	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		2.0	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.3	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.36	J	2.0	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	4.4		2.0	0.91	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	20		2.0	0.86	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-22916-1	B-7 28'-33'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-2	MW5 5'-10'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-3	MW4 22'-24'	Water	10/17/16 00:00	10/21/16 09:35
320-22916-4	B-8 25'-30'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-5	MW4 12'-14'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-6	B-8 5'-10'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-7	B-8 15'-20'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-8	B-8 35'-40'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-9	B-8 45'-50'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-10	B-7 8'-13'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-11	B-7 18'-23'	Water	10/19/16 00:00	10/21/16 09:35
320-22916-12	B-7 28'-33' DUP	Water	10/19/16 00:00	10/21/16 09:35
320-22916-13	MW-3 10'-15'	Water	10/17/16 00:00	10/21/16 09:35
320-22916-14	MW-3 20'-25'	Water	10/17/16 00:00	10/21/16 09:35
320-22916-15	MW-3 30'-35'	Water	10/17/16 00:00	10/21/16 09:35

Client Sample ID: B-7 28'-33'
Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-1
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.77**	**J B**	2.0	0.45	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.74	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.97	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.77	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.79	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.64	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.43	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.74	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.54	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorotetradecanoic acid (PFTeA)	**1.1**	**J B**	2.0	0.20	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.41**	**J**	2.0	0.12	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.66	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.90	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.86	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.70	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/24/16 09:28	10/26/16 22:03	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.63	ng/L		10/24/16 09:28	10/26/16 22:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*100*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C4 PFOA	*79*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C4 PFBA	*57*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C2 PFHxA	*89*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C5 PFNA	*74*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C2 PFDA	*72*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C2 PFUnA	*69*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C2 PFDoA	*67*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
18O2 PFHxS	*97*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C4-PFHpA	*77*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*
13C5-PFPeA	*85*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:03*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		20	3.8	ng/L		10/24/16 09:28	11/02/16 15:51	1
8:2FTS	ND		20	4.0	ng/L		10/24/16 09:28	11/02/16 15:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*111*		*25 - 150*	*10/24/16 09:28*	*11/02/16 15:51*	*1*
M2-8:2FTS	*120*		*25 - 150*	*10/24/16 09:28*	*11/02/16 15:51*	*1*

Client Sample ID: MW5 5'-10'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-2
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.1**	**B**	1.9	0.43	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorooctanoic acid (PFOA)	**1.5**	**J**	1.9	0.71	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorooctane Sulfonate (PFOS)	**3.9**		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.94	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.74	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.74**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorobutanesulfonic acid (PFBS)	**9.8**		1.9	0.87	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorohexanesulfonic acid (PFHxS)	**8.2**		1.9	0.82	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		10/24/16 09:28	10/26/16 22:11	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		10/24/16 09:28	10/26/16 22:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*100*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C4 PFOA	*71*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C4 PFBA	*38*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C2 PFHxA	*77*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C5 PFNA	*62*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C2 PFDA	*55*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C2 PFUnA	*50*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C2 PFDoA	*50*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
18O2 PFHxS	*95*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C4-PFHpA	*71*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*
13C5-PFPeA	*74*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:11*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.6	ng/L		10/24/16 09:28	11/02/16 15:58	1
8:2FTS	ND		19	3.8	ng/L		10/24/16 09:28	11/02/16 15:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*109*		*25 - 150*	*10/24/16 09:28*	*11/02/16 15:58*	*1*
M2-8:2FTS	*112*		*25 - 150*	*10/24/16 09:28*	*11/02/16 15:58*	*1*

Client Sample ID: MW4 22'-24'
Date Collected: 10/17/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-3
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.58**	**J B**	1.7	0.39	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorooctanoic acid (PFOA)	ND		1.7	0.64	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorooctane Sulfonate (PFOS)	ND		1.7	1.1	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluoropentanoic acid (PFPeA)	ND		1.7	0.84	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorohexanoic acid (PFHxA)	ND		1.7	0.67	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.68	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.56	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.37	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.64	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.50	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.7	0.47	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	1.7	0.17	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.49**	**J**	1.7	0.10	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.7	0.57	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorobutanesulfonic acid (PFBS)	**5.4**		1.7	0.78	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.7	0.74	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.61	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	1.0	ng/L		10/24/16 09:28	10/26/16 22:18	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.54	ng/L		10/24/16 09:28	10/26/16 22:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*99*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C4 PFOA	*74*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C8 FOSA	*6*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C4 PFBA	*54*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C2 PFHxA	*70*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C5 PFNA	*69*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C2 PFDA	*69*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C2 PFUnA	*65*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C2 PFDoA	*53*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
18O2 PFHxS	*102*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C4-PFHpA	*73*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*
13C5-PFPeA	*70*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:18*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		17	3.3	ng/L		10/24/16 09:28	11/02/16 16:06	1
8:2FTS	ND		17	3.4	ng/L		10/24/16 09:28	11/02/16 16:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*104*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:06*	*1*
M2-8:2FTS	*109*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:06*	*1*

Client Sample ID: B-8 25'-30'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-4

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.6**	**B**	1.9	0.43	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorooctanoic acid (PFOA)	**7.1**		1.9	0.71	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluoropentanoic acid (PFPeA)	**4.7**		1.9	0.93	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorohexanoic acid (PFHxA)	**5.4**		1.9	0.74	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluoroheptanoic acid (PFHpA)	**3.0**		1.9	0.76	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorotetradecanoic acid (PFTeA)	**0.96**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.66**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorobutanesulfonic acid (PFBS)	**11**		1.9	0.87	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorohexanesulfonic acid (PFHxS)	**3.8**		1.9	0.82	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		10/24/16 09:28	10/26/16 22:26	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		10/24/16 09:28	10/26/16 22:26	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*103*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C4 PFOA	*73*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C8 FOSA	*4*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C4 PFBA	*51*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C2 PFHxA	*81*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C5 PFNA	*61*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C2 PFDA	*51*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C2 PFUnA	*49*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C2 PFDoA	*52*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
18O2 PFHxS	*105*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C4-PFHpA	*77*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*
13C5-PFPeA	*78*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:26*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.6	ng/L		10/24/16 09:28	11/02/16 16:13	1
8:2FTS	ND		19	3.8	ng/L		10/24/16 09:28	11/02/16 16:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*104*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:13*	*1*
M2-8:2FTS	*106*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:13*	*1*

Client Sample ID: MW4 12'-14'
Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-5
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**11**	**B**	1.9	0.44	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.72	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.96	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.76	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.78	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.43	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.57	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorotetradecanoic acid (PFTeA)	**1.4**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.37**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorobutanesulfonic acid (PFBS)	**5.3**		1.9	0.89	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.84	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.69	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 22:33	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.62	ng/L		10/24/16 09:28	10/26/16 22:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*99*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C4 PFOA	*70*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C8 FOSA	*8*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C4 PFBA	*46*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C2 PFHxA	*67*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C5 PFNA	*65*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C2 PFDA	*67*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C2 PFUnA	*72*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C2 PFDoA	*75*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
18O2 PFHxS	*99*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C4-PFHpA	*67*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*
13C5-PFPeA	*65*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:33*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.7	ng/L		10/24/16 09:28	11/02/16 16:21	1
8:2FTS	ND		19	3.9	ng/L		10/24/16 09:28	11/02/16 16:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*98*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:21*	*1*
M2-8:2FTS	*107*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:21*	*1*

Client Sample ID: B-8 5'-10'
Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-6
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**4.7**	**B**	2.0	0.45	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorooctanoic acid (PFOA)	**3.8**		2.0	0.74	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorooctane Sulfonate (PFOS)	**1.5**	**J**	2.0	1.3	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.97	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorohexanoic acid (PFHxA)	**1.1**	**J**	2.0	0.77	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.79	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.64	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.43	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.74	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.57	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.54	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	2.0	0.20	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.69**	**J**	2.0	0.12	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.66	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorobutanesulfonic acid (PFBS)	**15**		2.0	0.90	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorohexanesulfonic acid (PFHxS)	**3.6**		2.0	0.86	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.70	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/24/16 09:28	10/26/16 22:40	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.63	ng/L		10/24/16 09:28	10/26/16 22:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*98*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C4 PFOA	*75*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C8 FOSA	*5*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C4 PFBA	*47*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C2 PFHxA	*73*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C5 PFNA	*66*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C2 PFDA	*59*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C2 PFUnA	*51*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C2 PFDoA	*47*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
18O2 PFHxS	*100*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C4-PFHpA	*72*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*
13C5-PFPeA	*70*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:40*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		20	3.8	ng/L		10/24/16 09:28	11/02/16 16:28	1
8:2FTS	ND		20	4.0	ng/L		10/24/16 09:28	11/02/16 16:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*101*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:28*	*1*
M2-8:2FTS	*113*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:28*	*1*

Client Sample ID: B-8 15'-20'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-7

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.5**	**J B**	1.9	0.44	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorooctanoic acid (PFOA)	**4.3**		1.9	0.72	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluoropentanoic acid (PFPeA)	**2.5**		1.9	0.95	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorohexanoic acid (PFHxA)	**2.2**		1.9	0.75	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluoroheptanoic acid (PFHpA)	**1.3**	**J**	1.9	0.77	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.51**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorobutanesulfonic acid (PFBS)	**12**		1.9	0.88	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorohexanesulfonic acid (PFHxS)	**2.1**		1.9	0.83	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 22:48	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		10/24/16 09:28	10/26/16 22:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*95*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C4 PFOA	*71*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C4 PFBA	*43*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C2 PFHxA	*71*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C5 PFNA	*58*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C2 PFDA	*53*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C2 PFUnA	*53*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C2 PFDoA	*57*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
18O2 PFHxS	*98*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C4-PFHpA	*71*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*
13C5-PFPeA	*69*		*25 - 150*	*10/24/16 09:28*	*10/26/16 22:48*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.7	ng/L		10/24/16 09:28	11/02/16 16:36	1
8:2FTS	ND		19	3.9	ng/L		10/24/16 09:28	11/02/16 16:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*105*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:36*	*1*
M2-8:2FTS	*108*		*25 - 150*	*10/24/16 09:28*	*11/02/16 16:36*	*1*

Client Sample ID: B-8 35'-40'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-8

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.1**	**B**	1.9	0.43	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorooctanoic acid (PFOA)	**8.1**		1.9	0.71	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluoropentanoic acid (PFPeA)	**3.9**		1.9	0.94	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorohexanoic acid (PFHxA)	**3.2**		1.9	0.75	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluoroheptanoic acid (PFHpA)	**2.6**		1.9	0.76	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorotetradecanoic acid (PFTeA)	**1.7**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.83**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorobutanesulfonic acid (PFBS)	**8.7**		1.9	0.87	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorohexanesulfonic acid (PFHxS)	**2.6**		1.9	0.83	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		10/24/16 09:28	10/26/16 23:25	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		10/24/16 09:28	10/26/16 23:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*97*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C4 PFOA	*61*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C4 PFBA	*45*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C2 PFHxA	*74*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C5 PFNA	*49*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C2 PFDA	*41*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C2 PFUnA	*40*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C2 PFDoA	*46*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
18O2 PFHxS	*100*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C4-PFHpA	*68*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*
13C5-PFPeA	*72*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:25*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.6	ng/L		10/24/16 09:28	11/02/16 17:13	1
8:2FTS	ND		19	3.8	ng/L		10/24/16 09:28	11/02/16 17:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*101*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:13*	*1*
M2-8:2FTS	*108*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:13*	*1*

Client Sample ID: B-8 45'-50'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-9

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.5**	**J B**	1.9	0.44	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorooctanoic acid (PFOA)	**2.1**		1.9	0.72	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.95	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorohexanoic acid (PFHxA)	**1.0**	**J**	1.9	0.76	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.77	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorotetradecanoic acid (PFTeA)	**1.7**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.22**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorobutanesulfonic acid (PFBS)	**2.6**		1.9	0.88	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorohexanesulfonic acid (PFHxS)	**1.0**	**J**	1.9	0.84	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.69	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 23:33	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		10/24/16 09:28	10/26/16 23:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*101*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C4 PFOA	*84*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C8 FOSA	*1*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C4 PFBA	*49*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C2 PFHxA	*89*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C5 PFNA	*69*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C2 PFDA	*63*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C2 PFUnA	*61*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C2 PFDoA	*65*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
18O2 PFHxS	*95*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C4-PFHpA	*87*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*
13C5-PFPeA	*83*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:33*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.7	ng/L		10/24/16 09:28	11/02/16 17:21	1
8:2FTS	ND		19	3.9	ng/L		10/24/16 09:28	11/02/16 17:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*115*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:21*	*1*
M2-8:2FTS	*120*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:21*	*1*

Client Sample ID: B-7 8'-13'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-10

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**7.2**	**B**	1.7	0.39	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorooctanoic acid (PFOA)	**7.1**		1.7	0.64	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorooctane Sulfonate (PFOS)	**5.1**		1.7	1.1	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluoropentanoic acid (PFPeA)	**6.2**		1.7	0.84	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorohexanoic acid (PFHxA)	**5.9**		1.7	0.67	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluoroheptanoic acid (PFHpA)	**3.2**		1.7	0.68	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorononanoic acid (PFNA)	ND		1.7	0.56	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorodecanoic acid (PFDA)	ND		1.7	0.37	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.64	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.50	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.7	0.47	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorotetradecanoic acid (PFTeA)	**1.6**	**J B**	1.7	0.17	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.24**	**J**	1.7	0.10	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.7	0.57	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorobutanesulfonic acid (PFBS)	**4.2**		1.7	0.78	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorohexanesulfonic acid (PFHxS)	**6.6**		1.7	0.74	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.61	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	1.0	ng/L		10/24/16 09:28	10/26/16 23:40	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.54	ng/L		10/24/16 09:28	10/26/16 23:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*100*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C4 PFOA	*89*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C8 FOSA	*4*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C4 PFBA	*53*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C2 PFHxA	*91*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C5 PFNA	*82*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C2 PFDA	*74*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C2 PFUnA	*71*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C2 PFDoA	*70*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
18O2 PFHxS	*96*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C4-PFHpA	*90*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*
13C5-PFPeA	*87*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:40*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		17	3.3	ng/L		10/24/16 09:28	11/02/16 17:28	1
8:2FTS	ND		17	3.4	ng/L		10/24/16 09:28	11/02/16 17:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*111*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:28*	*1*
M2-8:2FTS	*119*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:28*	*1*

Client Sample ID: B-7 18'-23'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-11

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.1**	**B**	1.9	0.43	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorooctanoic acid (PFOA)	**1.7**	**J**	1.9	0.71	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluoropentanoic acid (PFPeA)	**2.4**		1.9	0.94	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorohexanoic acid (PFHxA)	**3.1**		1.9	0.75	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.76**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorobutanesulfonic acid (PFBS)	**3.0**		1.9	0.87	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorohexanesulfonic acid (PFHxS)	**2.4**		1.9	0.83	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		10/24/16 09:28	10/26/16 23:48	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		10/24/16 09:28	10/26/16 23:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*99*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C4 PFOA	*74*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C8 FOSA	*4*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C4 PFBA	*55*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C2 PFHxA	*83*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C5 PFNA	*60*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C2 PFDA	*56*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C2 PFUnA	*55*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C2 PFDoA	*57*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
18O2 PFHxS	*100*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C4-PFHpA	*76*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*
13C5-PFPeA	*83*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:48*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.6	ng/L		10/24/16 09:28	11/02/16 17:36	1
8:2FTS	ND		19	3.8	ng/L		10/24/16 09:28	11/02/16 17:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*98*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:36*	*1*
M2-8:2FTS	*113*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:36*	*1*

Client Sample ID: B-7 28'-33' DUP

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-12

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.99**	**J B**	1.9	0.45	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.73	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.96	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.76	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.78	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.64	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.43	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.73	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.57	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.54	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorotetradecanoic acid (PFTeA)	**1.5**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.41**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.89	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.85	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.69	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/26/16 23:56	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.62	ng/L		10/24/16 09:28	10/26/16 23:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*99*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C4 PFOA	*80*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C4 PFBA	*54*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C2 PFHxA	*86*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C5 PFNA	*66*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C2 PFDA	*58*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C2 PFUnA	*64*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C2 PFDoA	*70*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
18O2 PFHxS	*98*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C4-PFHpA	*79*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*
13C5-PFPeA	*81*		*25 - 150*	*10/24/16 09:28*	*10/26/16 23:56*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.7	ng/L		10/24/16 09:28	11/02/16 17:43	1
8:2FTS	ND		19	3.9	ng/L		10/24/16 09:28	11/02/16 17:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*103*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:43*	*1*
M2-8:2FTS	*118*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:43*	*1*

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Client Sample ID: MW-3 10'-15'
Date Collected: 10/17/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-13
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.5**	**B**	1.7	0.40	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorooctanoic acid (PFOA)	**8.4**		1.7	0.65	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorooctane Sulfonate (PFOS)	**13**		1.7	1.1	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluoropentanoic acid (PFPeA)	**6.4**		1.7	0.86	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorohexanoic acid (PFHxA)	**5.9**		1.7	0.68	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluoroheptanoic acid (PFHpA)	**2.0**		1.7	0.70	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorononanoic acid (PFNA)	**0.90**	**J**	1.7	0.57	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorodecanoic acid (PFDA)	**1.9**		1.7	0.38	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.65	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.7	0.51	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.7	0.48	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorotetradecanoic acid (PFTeA)	**1.7**	**B**	1.7	0.17	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.60**	**J**	1.7	0.11	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.7	0.58	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorobutanesulfonic acid (PFBS)	**1.9**		1.7	0.80	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorohexanesulfonic acid (PFHxS)	**3.9**		1.7	0.76	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.62	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.7	1.1	ng/L		10/24/16 09:28	10/27/16 00:03	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.55	ng/L		10/24/16 09:28	10/27/16 00:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*96*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C4 PFOA	*85*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C8 FOSA	*1*	*	*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C4 PFBA	*47*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C2 PFHxA	*86*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C5 PFNA	*67*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C2 PFDA	*58*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C2 PFUnA	*51*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C2 PFDoA	*50*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
18O2 PFHxS	*99*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C4-PFHpA	*84*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*
13C5-PFPeA	*79*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:03*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		17	3.3	ng/L		10/24/16 09:28	11/02/16 17:51	1
8:2FTS	ND		17	3.5	ng/L		10/24/16 09:28	11/02/16 17:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*107*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:51*	*1*
M2-8:2FTS	*123*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:51*	*1*

Client Sample ID: MW-3 20'-25'

Date Collected: 10/17/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-14

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.0**	**B**	1.9	0.44	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorooctanoic acid (PFOA)	**4.1**		1.9	0.72	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluoropentanoic acid (PFPeA)	**3.1**		1.9	0.95	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorohexanoic acid (PFHxA)	**3.6**		1.9	0.75	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluoroheptanoic acid (PFHpA)	**2.0**		1.9	0.77	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorodecanoic acid (PFDA)	**0.42**	**J**	1.9	0.42	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorotetradecanoic acid (PFTeA)	**1.1**	**J B**	1.9	0.19	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.39**	**J**	1.9	0.12	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorobutanesulfonic acid (PFBS)	**3.8**		1.9	0.88	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorohexanesulfonic acid (PFHxS)	**6.8**		1.9	0.83	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		10/24/16 09:28	10/27/16 00:11	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		10/24/16 09:28	10/27/16 00:11	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*103*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C4 PFOA	*80*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C8 FOSA	*7*	*	*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C4 PFBA	*49*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C2 PFHxA	*74*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C5 PFNA	*75*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C2 PFDA	*75*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C2 PFUnA	*78*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C2 PFDoA	*80*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
18O2 PFHxS	*104*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C4-PFHpA	*73*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*
13C5-PFPeA	*71*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:11*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		19	3.7	ng/L		10/24/16 09:28	11/02/16 17:58	1
8:2FTS	ND		19	3.9	ng/L		10/24/16 09:28	11/02/16 17:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*105*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:58*	*1*
M2-8:2FTS	*121*		*25 - 150*	*10/24/16 09:28*	*11/02/16 17:58*	*1*

Client Sample ID: MW-3 30'-35'

Date Collected: 10/17/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-15

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.1**	**B**	2.0	0.45	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorooctanoic acid (PFOA)	**7.8**		2.0	0.74	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluoropentanoic acid (PFPeA)	**3.0**		2.0	0.98	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorohexanoic acid (PFHxA)	**5.0**		2.0	0.78	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluoroheptanoic acid (PFHpA)	**2.8**		2.0	0.79	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.43	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.74	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.54	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	2.0	0.20	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.36**	**J**	2.0	0.12	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.66	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorobutanesulfonic acid (PFBS)	**4.4**		2.0	0.91	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorohexanesulfonic acid (PFHxS)	**20**		2.0	0.86	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.70	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/24/16 09:28	10/27/16 00:18	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.63	ng/L		10/24/16 09:28	10/27/16 00:18	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*101*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C4 PFOA	*75*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C4 PFBA	*51*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C2 PFHxA	*77*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C5 PFNA	*65*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C2 PFDA	*63*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C2 PFUnA	*66*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C2 PFDoA	*72*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
18O2 PFHxS	*103*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C4-PFHpA	*73*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*
13C5-PFPeA	*74*		*25 - 150*	*10/24/16 09:28*	*10/27/16 00:18*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		20	3.8	ng/L		10/24/16 09:28	11/02/16 18:06	1
8:2FTS	ND		20	4.0	ng/L		10/24/16 09:28	11/02/16 18:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*98*		*25 - 150*	*10/24/16 09:28*	*11/02/16 18:06*	*1*
M2-8:2FTS	*106*		*25 - 150*	*10/24/16 09:28*	*11/02/16 18:06*	*1*

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C4 PFOS (25-150)	3C4 PFOA (25-150)	3C8 FOSA (25-150)	3C4 PFBA (25-150)	3C2 PFHx (25-150)	3C5 PFNA (25-150)	3C2 PFDA (25-150)	3C2 PFUn (25-150)
320-22916-1	B-7 28'-33'	100	79	2 *	57	89	74	72	69
320-22916-2	MW5 5'-10'	100	71	2 *	38	77	62	55	50
320-22916-3	MW4 22'-24'	99	74	6 *	54	70	69	69	65
320-22916-4	B-8 25'-30'	103	73	4 *	51	81	61	51	49
320-22916-5	MW4 12'-14'	99	70	8 *	46	67	65	67	72
320-22916-6	B-8 5'-10'	98	75	5 *	47	73	66	59	51
320-22916-7	B-8 15'-20'	95	71	3 *	43	71	58	53	53
320-22916-8	B-8 35'-40'	97	61	2 *	45	74	49	41	40
320-22916-9	B-8 45'-50'	101	84	1 *	49	89	69	63	61
320-22916-10	B-7 8'-13'	100	89	4 *	53	91	82	74	71
320-22916-11	B-7 18'-23'	99	74	4 *	55	83	60	56	55
320-22916-12	B-7 28'-33' DUP	99	80	2 *	54	86	66	58	64
320-22916-13	MW-3 10'-15'	96	85	1 *	47	86	67	58	51
320-22916-14	MW-3 20'-25'	103	80	7 *	49	74	75	75	78
320-22916-15	MW-3 30'-35'	101	75	3 *	51	77	65	63	66
LCS 320-134076/2-A	Lab Control Sample	97	103	75	98	95	102	108	108
LCSD 320-134076/3-A	Lab Control Sample Dup	107	117	57	108	108	112	116	122
MB 320-134076/1-A	Method Blank	106	105	65	110	107	96	98	95

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	3C2 PFDoA (25-150)	3O2 PFHxS (25-150)	3C4-PFHpA (25-150)	3C5-PFPeA (25-150)
320-22916-1	B-7 28'-33'	67	97	77	85
320-22916-2	MW5 5'-10'	50	95	71	74
320-22916-3	MW4 22'-24'	53	102	73	70
320-22916-4	B-8 25'-30'	52	105	77	78
320-22916-5	MW4 12'-14'	75	99	67	65
320-22916-6	B-8 5'-10'	47	100	72	70
320-22916-7	B-8 15'-20'	57	98	71	69
320-22916-8	B-8 35'-40'	46	100	68	72
320-22916-9	B-8 45'-50'	65	95	87	83
320-22916-10	B-7 8'-13'	70	96	90	87
320-22916-11	B-7 18'-23'	57	100	76	83
320-22916-12	B-7 28'-33' DUP	70	98	79	81
320-22916-13	MW-3 10'-15'	50	99	84	79
320-22916-14	MW-3 20'-25'	80	104	73	71
320-22916-15	MW-3 30'-35'	72	103	73	74
LCS 320-134076/2-A	Lab Control Sample	107	97	97	95
LCSD 320-134076/3-A	Lab Control Sample Dup	122	103	108	107
MB 320-134076/1-A	Method Blank	92	103	101	115

Surrogate Legend

13C4 PFOS = 13C4 PFOS
13C4 PFOA = 13C4 PFOA
13C8 FOSA = 13C8 FOSA
13C4 PFBA = 13C4 PFBA
13C2 PFHxA = 13C2 PFHxA
13C5 PFNA = 13C5 PFNA
13C2 PFDA = 13C2 PFDA
13C2 PFUnA = 13C2 PFUnA

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

13C2 PFDoA = 13C2 PFDoA
18O2 PFHxS = 18O2 PFHxS
13C4-PFHpA = 13C4-PFHpA
13C5-PFPeA = 13C5-PFPeA

Method: 537 (modified) - Perfluorinated Hydrocarbons

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)									
		M2-6:2FTS	M2-8:2FTS								
Lab Sample ID	Client Sample ID	(25-150)	(25-150)								
320-22916-1 - RE	B-7 28'-33'	111	120								
320-22916-2 - RE	MW5 5'-10'	109	112								
320-22916-3 - RE	MW4 22'-24'	104	109								
320-22916-4 - RE	B-8 25'-30'	104	106								
320-22916-5 - RE	MW4 12'-14'	98	107								
320-22916-6 - RE	B-8 5'-10'	101	113								
320-22916-7 - RE	B-8 15'-20'	105	108								
320-22916-8 - RE	B-8 35'-40'	101	108								
320-22916-9 - RE	B-8 45'-50'	115	120								
320-22916-10 - RE	B-7 8'-13'	111	119								
320-22916-11 - RE	B-7 18'-23'	98	113								
320-22916-12 - RE	B-7 28'-33' DUP	103	118								
320-22916-13 - RE	MW-3 10'-15'	107	123								
320-22916-14 - RE	MW-3 20'-25'	105	121								
320-22916-15 - RE	MW-3 30'-35'	98	106								
LCS 320-135548/2-A	Lab Control Sample	100	101								
LCSD 320-135548/3-A	Lab Control Sample Dup	102	99								
MB 320-135548/1-A	Method Blank	98	101								

Surrogate Legend

M2-6:2FTS = M2-6:2FTS
M2-8:2FTS = M2-8:2FTS

Method: 537 (modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-134076/1-A
Matrix: Water
Analysis Batch: 134714

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 134076

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.712	J	2.0	0.46	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorotetradecanoic acid (PFTeA)	0.688	J	2.0	0.20	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/24/16 09:28	10/26/16 21:40	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		10/24/16 09:28	10/26/16 21:40	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*106*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C4 PFOA	*105*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C8 FOSA	*65*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C4 PFBA	*110*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C2 PFHxA	*107*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C5 PFNA	*96*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C2 PFDA	*98*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C2 PFUnA	*95*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C2 PFDoA	*92*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
18O2 PFHxS	*103*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C4-PFHpA	*101*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*
13C5-PFPeA	*115*		*25 - 150*	*10/24/16 09:28*	*10/26/16 21:40*	*1*

Lab Sample ID: LCS 320-134076/2-A
Matrix: Water
Analysis Batch: 135106

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 134076

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	46.4		ng/L		116	74 - 138
Perfluorooctanoic acid (PFOA)	40.0	40.5		ng/L		101	63 - 141
Perfluorooctane Sulfonate (PFOS)	37.1	37.9		ng/L		102	47 - 162
Perfluoropentanoic acid (PFPeA)	40.0	40.5		ng/L		101	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	40.6		ng/L		102	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	40.8		ng/L		102	63 - 135

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-134076/2-A
Matrix: Water
Analysis Batch: 135106

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 134076

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	39.8		ng/L		99	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.0		ng/L		100	66 - 141
Perfluoroundecanoic acid (PFUnA)	40.0	38.7		ng/L		97	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	42.3		ng/L		106	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	41.2		ng/L		103	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	50.1		ng/L		125	47 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	43.0		ng/L		107	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	44.4		ng/L		111	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	37.8		ng/L		107	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.5		ng/L		103	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.8		ng/L		105	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	40.9		ng/L		106	35 - 157
Perfluorooctane Sulfonamide (FOSA)	40.0	42.1		ng/L		105	59 - 163

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOS	*97*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C8 FOSA	*75*		*25 - 150*
13C4 PFBA	*98*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*
13C5 PFNA	*102*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*108*		*25 - 150*
13C2 PFDoA	*107*		*25 - 150*
18O2 PFHxS	*97*		*25 - 150*
13C4-PFHpA	*97*		*25 - 150*
13C5-PFPeA	*95*		*25 - 150*

Lab Sample ID: LCSD 320-134076/3-A
Matrix: Water
Analysis Batch: 135002

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 134076

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	46.1		ng/L		115	74 - 138	1	30
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	63 - 141	0	30
Perfluorooctane Sulfonate (PFOS)	37.1	37.9		ng/L		102	47 - 162	0	30
Perfluoropentanoic acid (PFPeA)	40.0	39.5		ng/L		99	69 - 134	2	30
Perfluorohexanoic acid (PFHxA)	40.0	41.1		ng/L		103	70 - 136	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.4		ng/L		103	63 - 135	2	30

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-134076/3-A
Matrix: Water
Analysis Batch: 135002

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 134076

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	42.6		ng/L		106	71 - 140	7	30
Perfluorodecanoic acid (PFDA)			40.0	41.5		ng/L		104	66 - 141	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	38.3		ng/L		96	68 - 139	1	30
Perfluorododecanoic acid (PFDoA)			40.0	42.3		ng/L		106	71 - 139	0	30
Perfluorotridecanoic Acid (PFTriA)			40.0	41.8		ng/L		104	51 - 139	1	30
Perfluorotetradecanoic acid (PFTeA)			40.0	47.2		ng/L		118	47 - 130	6	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	53.4		ng/L		134	50 - 150	22	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	50.1		ng/L		125	50 - 150	12	30
Perfluorobutanesulfonic acid (PFBS)			35.4	39.3		ng/L		111	55 - 147	4	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	38.7		ng/L		106	58 - 138	3	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	39.4		ng/L		103	32 - 170	1	30
Perfluorodecanesulfonic acid (PFDS)			38.6	39.3		ng/L		102	35 - 157	4	30
Perfluorooctane Sulfonamide (FOSA)			40.0	43.1		ng/L		108	59 - 163	2	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOS	*107*		*25 - 150*
13C4 PFOA	*117*		*25 - 150*
13C8 FOSA	*57*		*25 - 150*
13C4 PFBA	*108*		*25 - 150*
13C2 PFHxA	*108*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*116*		*25 - 150*
13C2 PFUnA	*122*		*25 - 150*
13C2 PFDoA	*122*		*25 - 150*
18O2 PFHxS	*103*		*25 - 150*
13C4-PFHpA	*108*		*25 - 150*
13C5-PFPeA	*107*		*25 - 150*

Lab Sample ID: MB 320-135548/1-A
Matrix: Water
Analysis Batch: 135758

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 135548

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2FTS	ND		20	3.8	ng/L		10/24/16 09:28	11/02/16 15:28	1
8:2FTS	ND		20	4.0	ng/L		10/24/16 09:28	11/02/16 15:28	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
M2-6:2FTS	*98*		*25 - 150*	*10/24/16 09:28*	*11/02/16 15:28*	*1*
M2-8:2FTS	*101*		*25 - 150*	*10/24/16 09:28*	*11/02/16 15:28*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-135548/2-A
Matrix: Water
Analysis Batch: 135758

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135548

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
M2-6:2FTS	100		25 - 150
M2-8:2FTS	101		25 - 150

Lab Sample ID: LCSD 320-135548/3-A
Matrix: Water
Analysis Batch: 135758

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 135548

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
M2-6:2FTS	102		25 - 150
M2-8:2FTS	99		25 - 150

LCMS

Prep Batch: 134076

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-22916-1	B-7 28'-33'	Total/NA	Water	3535	
320-22916-2	MW5 5'-10'	Total/NA	Water	3535	
320-22916-3	MW4 22'-24'	Total/NA	Water	3535	
320-22916-4	B-8 25'-30'	Total/NA	Water	3535	
320-22916-5	MW4 12'-14'	Total/NA	Water	3535	
320-22916-6	B-8 5'-10'	Total/NA	Water	3535	
320-22916-7	B-8 15'-20'	Total/NA	Water	3535	
320-22916-8	B-8 35'-40'	Total/NA	Water	3535	
320-22916-9	B-8 45'-50'	Total/NA	Water	3535	
320-22916-10	B-7 8'-13'	Total/NA	Water	3535	
320-22916-11	B-7 18'-23'	Total/NA	Water	3535	
320-22916-12	B-7 28'-33' DUP	Total/NA	Water	3535	
320-22916-13	MW-3 10'-15'	Total/NA	Water	3535	
320-22916-14	MW-3 20'-25'	Total/NA	Water	3535	
320-22916-15	MW-3 30'-35'	Total/NA	Water	3535	
MB 320-134076/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-134076/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-134076/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 134714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-22916-1	B-7 28'-33'	Total/NA	Water	537 (modified)	134076
320-22916-2	MW5 5'-10'	Total/NA	Water	537 (modified)	134076
320-22916-3	MW4 22'-24'	Total/NA	Water	537 (modified)	134076
320-22916-4	B-8 25'-30'	Total/NA	Water	537 (modified)	134076
320-22916-5	MW4 12'-14'	Total/NA	Water	537 (modified)	134076
320-22916-6	B-8 5'-10'	Total/NA	Water	537 (modified)	134076
320-22916-7	B-8 15'-20'	Total/NA	Water	537 (modified)	134076
320-22916-8	B-8 35'-40'	Total/NA	Water	537 (modified)	134076
320-22916-9	B-8 45'-50'	Total/NA	Water	537 (modified)	134076
320-22916-10	B-7 8'-13'	Total/NA	Water	537 (modified)	134076
320-22916-11	B-7 18'-23'	Total/NA	Water	537 (modified)	134076
320-22916-12	B-7 28'-33' DUP	Total/NA	Water	537 (modified)	134076
320-22916-13	MW-3 10'-15'	Total/NA	Water	537 (modified)	134076
320-22916-14	MW-3 20'-25'	Total/NA	Water	537 (modified)	134076
320-22916-15	MW-3 30'-35'	Total/NA	Water	537 (modified)	134076
MB 320-134076/1-A	Method Blank	Total/NA	Water	537 (modified)	134076

Analysis Batch: 135002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-134076/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	134076

Analysis Batch: 135106

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-134076/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	134076

Prep Batch: 135548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-22916-1 - RE	B-7 28'-33'	Total/NA	Water	3535	
320-22916-2 - RE	MW5 5'-10'	Total/NA	Water	3535	
320-22916-3 - RE	MW4 22'-24'	Total/NA	Water	3535	

LCMS (Continued)

Prep Batch: 135548 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-22916-4 - RE	B-8 25'-30'	Total/NA	Water	3535	
320-22916-5 - RE	MW4 12'-14'	Total/NA	Water	3535	
320-22916-6 - RE	B-8 5'-10'	Total/NA	Water	3535	
320-22916-7 - RE	B-8 15'-20'	Total/NA	Water	3535	
320-22916-8 - RE	B-8 35'-40'	Total/NA	Water	3535	
320-22916-9 - RE	B-8 45'-50'	Total/NA	Water	3535	
320-22916-10 - RE	B-7 8'-13'	Total/NA	Water	3535	
320-22916-11 - RE	B-7 18'-23'	Total/NA	Water	3535	
320-22916-12 - RE	B-7 28'-33' DUP	Total/NA	Water	3535	
320-22916-13 - RE	MW-3 10'-15'	Total/NA	Water	3535	
320-22916-14 - RE	MW-3 20'-25'	Total/NA	Water	3535	
320-22916-15 - RE	MW-3 30'-35'	Total/NA	Water	3535	
MB 320-135548/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-135548/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-135548/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 135758

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-22916-1 - RE	B-7 28'-33'	Total/NA	Water	537 (modified)	135548
320-22916-2 - RE	MW5 5'-10'	Total/NA	Water	537 (modified)	135548
320-22916-3 - RE	MW4 22'-24'	Total/NA	Water	537 (modified)	135548
320-22916-4 - RE	B-8 25'-30'	Total/NA	Water	537 (modified)	135548
320-22916-5 - RE	MW4 12'-14'	Total/NA	Water	537 (modified)	135548
320-22916-6 - RE	B-8 5'-10'	Total/NA	Water	537 (modified)	135548
320-22916-7 - RE	B-8 15'-20'	Total/NA	Water	537 (modified)	135548
320-22916-8 - RE	B-8 35'-40'	Total/NA	Water	537 (modified)	135548
320-22916-9 - RE	B-8 45'-50'	Total/NA	Water	537 (modified)	135548
320-22916-10 - RE	B-7 8'-13'	Total/NA	Water	537 (modified)	135548
320-22916-11 - RE	B-7 18'-23'	Total/NA	Water	537 (modified)	135548
320-22916-12 - RE	B-7 28'-33' DUP	Total/NA	Water	537 (modified)	135548
320-22916-13 - RE	MW-3 10'-15'	Total/NA	Water	537 (modified)	135548
320-22916-14 - RE	MW-3 20'-25'	Total/NA	Water	537 (modified)	135548
320-22916-15 - RE	MW-3 30'-35'	Total/NA	Water	537 (modified)	135548
MB 320-135548/1-A	Method Blank	Total/NA	Water	537 (modified)	135548
LCS 320-135548/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	135548
LCSD 320-135548/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	135548

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Client Sample ID: B-7 28'-33'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.7 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 22:03	TTP	TAL SAC
Total/NA	Prep	3535	RE		253.7 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 15:51	TTP	TAL SAC

Client Sample ID: MW5 5'-10'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 22:11	TTP	TAL SAC
Total/NA	Prep	3535	RE		264 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 15:58	TTP	TAL SAC

Client Sample ID: MW4 22'-24'

Date Collected: 10/17/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293.8 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 22:18	TTP	TAL SAC
Total/NA	Prep	3535	RE		293.8 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 16:06	TTP	TAL SAC

Client Sample ID: B-8 25'-30'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.5 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 22:26	TTP	TAL SAC
Total/NA	Prep	3535	RE		264.5 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 16:13	TTP	TAL SAC

Client Sample ID: MW4 12'-14'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.4 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 22:33	TTP	TAL SAC
Total/NA	Prep	3535	RE		258.4 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Client Sample ID: MW4 12'-14'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 16:21	TTP	TAL SAC

Client Sample ID: B-8 5'-10'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 22:40	TTP	TAL SAC
Total/NA	Prep	3535	RE		254 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 16:28	TTP	TAL SAC

Client Sample ID: B-8 15'-20'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.9 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 22:48	TTP	TAL SAC
Total/NA	Prep	3535	RE		260.9 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 16:36	TTP	TAL SAC

Client Sample ID: B-8 35'-40'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.3 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 23:25	TTP	TAL SAC
Total/NA	Prep	3535	RE		263.3 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 17:13	TTP	TAL SAC

Client Sample ID: B-8 45'-50'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 23:33	TTP	TAL SAC
Total/NA	Prep	3535	RE		260 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 17:21	TTP	TAL SAC

Client Sample ID: B-7 8'-13'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			293.8 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 23:40	TTP	TAL SAC
Total/NA	Prep	3535	RE		293.8 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 17:28	TTP	TAL SAC

Client Sample ID: B-7 18'-23'

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.4 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 23:48	TTP	TAL SAC
Total/NA	Prep	3535	RE		263.4 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 17:36	TTP	TAL SAC

Client Sample ID: B-7 28'-33' DUP

Date Collected: 10/19/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.3 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/26/16 23:56	TTP	TAL SAC
Total/NA	Prep	3535	RE		257.3 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 17:43	TTP	TAL SAC

Client Sample ID: MW-3 10'-15'

Date Collected: 10/17/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.6 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/27/16 00:03	TTP	TAL SAC
Total/NA	Prep	3535	RE		287.6 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 17:51	TTP	TAL SAC

Client Sample ID: MW-3 20'-25'

Date Collected: 10/17/16 00:00
Date Received: 10/21/16 09:35

Lab Sample ID: 320-22916-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			261.1 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/27/16 00:11	TTP	TAL SAC
Total/NA	Prep	3535	RE		261.1 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Client Sample ID: MW-3 20'-25'

Lab Sample ID: 320-22916-14

Date Collected: 10/17/16 00:00
Matrix: Water
Date Received: 10/21/16 09:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 17:58	TTP	TAL SAC

Client Sample ID: MW-3 30'-35'

Lab Sample ID: 320-22916-15

Date Collected: 10/17/16 00:00
Matrix: Water
Date Received: 10/21/16 09:35

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.4 mL	0.5 mL	134076	10/24/16 09:28	HJA	TAL SAC
Total/NA	Analysis	537 (modified)		1			134714	10/27/16 00:18	TTP	TAL SAC
Total/NA	Prep	3535	RE		253.4 mL	0.5 mL	135548	10/24/16 09:28	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RE	1			135758	11/02/16 18:06	TTP	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-16 *
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17
Illinois	NELAP	5	200004	07-31-17
Kansas	NELAP	7	E-10336	01-31-17
Kentucky (UST)	State Program	4	58	02-23-17
Kentucky (WW)	State Program	4	98016	12-31-16 *
Minnesota	NELAP	5	039-999-348	12-31-16 *
Minnesota (Petrofund)	State Program	1	3506	07-31-17
Nevada	State Program	9	OH-000482008A	07-31-17
New Jersey	NELAP	2	OH001	06-30-17
New York	NELAP	2	10975	03-31-17
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058

TestAmerica Job ID: 320-22916-1

Laboratory: TestAmerica Canton (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-13-00319	11-26-16 *
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-17
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

* Certification renewal pending - certification considered valid.

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
	Wurtsmith AFB	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
		dcorsi@dlz.com		Jeff Pincumbe

Dept-Division-District	Index	CC Email 2	Project Due Date	Sample Collector Phone
RRD-SUPERFUND	44081	dorin.bogdan@aecom.com		

State Project Manager	PCA	CC Email 3		Contract Firm
Robert Delaney	30707 (PCA)			DLZ

State Project Manager Email	Project		Accept Analysis hold time codes	Contract Firm Primary Contact
delaneyr@michigan.gov	45409300			Dale J. Corsi

State Project Manager Phone	Phase		Primary Contact Phone
517-388-7037	00	320-22916 Chain of Custody	517-667-4299 (Cell)

	Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1		B-7 28' - 33'	10/19/2016		2	PFC analysis only
2		MW5 5' - 10'	10/19/2016		2	PFC analysis only
3		MW4 22' - 24'	10/17/2016		2	PFC analysis only
4		B-8 25' - 30'	10/19/2016		2	PFC analysis only
5		MW4 12' - 14'	10/19/2016		2	PFC analysis only
6		B-8 5' - 10'	10/19/2016		2	PFC analysis only
7		B-8 15' - 20'	10/19/2016		2	PFC analysis only
8		B-8 35' - 40'	10/19/2016		2	PFC analysis only
9		B-8 45' - 50'	10/19/2016		2	PFC analysis only
10			10/19/2016		2	PFC analysis only

ORGANIC CHEMISTRY

	1 2 3 4 5 6 7 8 9 10
VOA - Volatile Organic Acidic	
Volatiles - Full List	
BTEX/MTBE/TMB only	
Chlorinated only	
GRO	
1,4 Dioxane	
METH - Methane, Ethane, Ethene	
Methane, Ethane, Ethene	
ON - Pesticides, PCBs	
Pesticides & PCBs	
Pesticides only	
PCBs only	
Toxaphene	
Chlordane	
BNA - Base Neutral Acids	
BNAs	
Benzidines	
PNAs only	
BNs only	
Acids only	
Organic Specialty Requests	
Library search - Volatiles	
Library search - SemiVols	
Finger Print	
DRO / ORO	

METALS CHEMISTRY PACKAGES

	1 2 3 4 5 6 7 8 9 10
OpMemo2 - Total	
OpMemo2 - Dissolved	
(Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)	
Michigan10 - Total	
Michigan10 - Dissolved	
(As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)	

MAD - DISSOLVED METALS

	1 2 3 4 5 6 7 8 9 10
Diss - Silver - Ag	
Diss - Aluminum - Al	
Diss - Arsenic - As	
Diss - Boron - B	
Diss - Barium - Ba	
Diss - Beryllium - Be	
Diss - Cadmium - Cd	
Diss - Cobalt - Co	
Diss - Chromium - Cr	
Diss - Copper - Cu	
Diss - Iron - Fe	
Diss - Mercury - Hg	
Diss - Lithium - Li	
Diss - Manganese - Mn	
Diss - Molybdenum - Mo	
Diss - Nickel - Ni	
Diss - Lead - Pb	
Diss - Antimony - Sb	
Diss - Selenium - Se	
Diss - Strontium - Sr	
Diss - Titanium - Ti	
Diss - Thallium - Tl	
Diss - Uranium - U	
Diss - Vanadium - V	
Diss - Zinc - Zn	
Diss - Calcium - Ca	
Diss - Potassium - K	
Diss - Magnesium - Mg	
Diss - Sodium - Na	
Diss - Hardness - Ca, Mg	
MD - Metals Dissolved	
Lab Filtration	

MA - TOTAL METALS

	1 2 3 4 5 6 7 8 9 10
Silver - Ag	
Aluminum - Al	
Arsenic - As	
Boron - B	
Barium - Ba	
Beryllium - Be	
Cadmium - Cd	
Cobalt - Co	
Chromium - Cr	
Copper - Cu	
Iron - Fe	
Mercury - Hg	
Lithium - Li	
Manganese - Mn	
Molybdenum - Mo	
Nickel - Ni	
Lead - Pb	
Antimony - Sb	
Selenium - Se	
Strontium - Sr	
Titanium - Ti	
Thallium - Tl	
Uranium - U	
Vanadium - V	
Zinc - Zn	
Calcium - Ca	
Potassium - K	
Magnesium - Mg	
Sodium - Na	
Hardness - Ca, Mg	
LHG - Low Level Mercury	
Mercury Low Level - Hg	

GENERAL CHEMISTRY

		1 2 3 4 5 6 7 8 9 10
GB	Total Cyanide - CN	
GB	Amenable Cyanide - CN	
GCN	Available Cyanide - CN	
CA	Chlorophyll	
GN	Ortho Phosphate - OP	
GN	Nitrite - NO_2	
GN	Nitrate - NO_3 (Calc.)	
GN	Suspended Solids - SS	
GN	Dissolved Solids - TDS	
MN	Diss Solids - TDS (Calc.)	
GN	Turbidity	
MN	Total Alkalinity	
MN	Bicarb/Carb Alkalinity (includes Total Alkalinity)	
MN	Chloride - Cl	
MN	Fluoride - F	
MN	Sulfate - SO4	
MN	Chromium 6 - Cr+6	
MN	Conductivity	
MN	pH	
GA	Chem Oxyg Dem - COD	
GA	Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved)	
GN	Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved)	
GA	Total Org Carbon - TOC	
GA	Ammonia - NH3	
GA	Nitrate+Nitrite - NO3+NO2	
GA	Kjeldahl Nitrogen - KN	
GA	Total Phosphorus - TP	

Chain of Custody

	Relinquished by	Received By	Date / Time
Print Name & Org	DALE J. CORSI, DLZ	Terri Hanlin	10/21/16 1055
Signature	Dale J Corsi	Terri Hanlin	
Print Name & Org	Terri Hanlin T/L	Wesley Shockley T/WS	10/21/16 0925 3.2°C
Signature	Terri Hanlin	Wesley Shockley	
Print Name			

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
	Wurtsmith AFB	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
		dcorsi@dlz.com		Jeff Pincumbe
Dept-Division-District	**Index**	**CC Email 2**	**Project Due Date**	**Sample Collector Phone**
RRD-SUPERFUND	44081	dorin.bogdan@aecom.com		
State Project Manager	**PCA**	**CC Email 3**		**Contract Firm**
Robert Delaney	30707 (PCA)			DLZ
State Project Manager Email	**Project**	**Overflow Lab Choice 1**	**Accept Analysis hold time codes**	**Contract Firm Primary Contact**
delaneyr@michigan.gov	45409300			Dale J. Corsi
State Project Manager Phone	**Phase**	**Overflow Lab Choice 2**		**Primary Contact Phone**
517-388-7037	00			517-667-4299 (Cell)

	Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1		B-7 8' - 13'	10/19/2016		2	PFC analysis only
2		B-7 18' - 23'	10/19/2016		2	PFC analysis only
3		B-7 28' - 33' DUP	10/19/2016		2	PFC analysis only
4		MW-3 10' - 15'	10/17/2016		2	PFC analysis only
5		MW-3 20' - 25'	10/17/2016		2	PFC analysis only
6		MW-3 30' - 35'	10/17/2016		2	PFC analysis only
7						
8						
9						
10						

190 [redacted] Michigan

ORGANIC CHEMISTRY

VOA - Volatile Organic Acidic	
Volatiles - Full List	1 2 3 4 5 6 7 8 9 10
BTEX/MTBE/TMB only	1 2 3 4 5 6 7 8 9 10
Chlorinated only	1 2 3 4 5 6 7 8 9 10
GRO	1 2 3 4 5 6 7 8 9 10
1,4 Dioxane	1 2 3 4 5 6 7 8 9 10
METH - Methane, Ethane, Ethene	
Methane, Ethane, Ethene	1 2 3 4 5 6 7 8 9 10
ON - Pesticides, PCBs	
Pesticides & PCBs	1 2 3 4 5 6 7 8 9 10
Pesticides only	1 2 3 4 5 6 7 8 9 10
PCBs only	1 2 3 4 5 6 7 8 9 10
Toxaphene	1 2 3 4 5 6 7 8 9 10
Chlordane	1 2 3 4 5 6 7 8 9 10
BNA - Base Neutral Acids	
BNAs	1 2 3 4 5 6 7 8 9 10
Benzidines	1 2 3 4 5 6 7 8 9 10
PNAs only	1 2 3 4 5 6 7 8 9 10
BNs only	1 2 3 4 5 6 7 8 9 10
Acids only	1 2 3 4 5 6 7 8 9 10
Organic Specialty Requests	
Library search - Volatiles	1 2 3 4 5 6 7 8 9 10
Library search - SemiVols	1 2 3 4 5 6 7 8 9 10
Finger Print	1 2 3 4 5 6 7 8 9 10
DRO / ORO	1 2 3 4 5 6 7 8 9 10

METALS CHEMISTRY PACKAGES

OpMemo2 - Total	1 2 3 4 5 6 7 8 9 10
OpMemo2 - Dissolved	1 2 3 4 5 6 7 8 9 10
(Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)	
Michigan10 - Total	1 2 3 4 5 6 7 8 9 10
Michigan10 - Dissolved	1 2 3 4 5 6 7 8 9 10
(As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)	

MAD - DISSOLVED METALS

Diss - Silver - Ag	1 2 3 4 5 6 7 8 9 10
Diss - Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Diss - Arsenic - As	1 2 3 4 5 6 7 8 9 10
Diss - Boron - B	1 2 3 4 5 6 7 8 9 10
Diss - Barium - Ba	1 2 3 4 5 6 7 8 9 10
Diss - Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Diss - Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Diss - Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Diss - Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Diss - Copper - Cu	1 2 3 4 5 6 7 8 9 10
Diss - Iron - Fe	1 2 3 4 5 6 7 8 9 10
Diss - Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Diss - Lithium - Li	1 2 3 4 5 6 7 8 9 10
Diss - Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Diss - Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Diss - Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Diss - Lead - Pb	1 2 3 4 5 6 7 8 9 10
Diss - Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Diss - Selenium - Se	1 2 3 4 5 6 7 8 9 10
Diss - Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Diss - Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Diss - Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Diss - Uranium - U	1 2 3 4 5 6 7 8 9 10
Diss - Vanadium - V	1 2 3 4 5 6 7 8 9 10
Diss - Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Diss - Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Diss - Potassium - K	1 2 3 4 5 6 7 8 9 10
Diss - Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Diss - Sodium - Na	1 2 3 4 5 6 7 8 9 10
Diss - Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10
MD - Metals Dissolved	
Lab Filtration	1 2 3 4 5 6 7 8 9 10

MA - TOTAL METALS

Silver - Ag	1 2 3 4 5 6 7 8 9 10
Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Arsenic - As	1 2 3 4 5 6 7 8 9 10
Boron - B	1 2 3 4 5 6 7 8 9 10
Barium - Ba	1 2 3 4 5 6 7 8 9 10
Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Copper - Cu	1 2 3 4 5 6 7 8 9 10
Iron - Fe	1 2 3 4 5 6 7 8 9 10
Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Lithium - Li	1 2 3 4 5 6 7 8 9 10
Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Lead - Pb	1 2 3 4 5 6 7 8 9 10
Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Selenium - Se	1 2 3 4 5 6 7 8 9 10
Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Uranium - U	1 2 3 4 5 6 7 8 9 10
Vanadium - V	1 2 3 4 5 6 7 8 9 10
Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Potassium - K	1 2 3 4 5 6 7 8 9 10
Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Sodium - Na	1 2 3 4 5 6 7 8 9 10
Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10
LHG - Low Level Mercury	
Mercury Low Level - Hg	1 2 3 4 5 6 7 8 9 10

GENERAL CHEMISTRY

GB Total Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GB Amenable Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GCN Available Cyanide - CN	1 2 3 4 5 6 7 8 9 10
CA Chlorophyll	1 2 3 4 5 6 7 8 9 10
GN Ortho Phosphate - OP	1 2 3 4 5 6 7 8 9 10
GN Nitrite - NO_2	1 2 3 4 5 6 7 8 9 10
GN Nitrate - NO_3 (Calc.)	1 2 3 4 5 6 7 8 9 10
GN Suspended Solids - SS	1 2 3 4 5 6 7 8 9 10
GN Dissolved Solids - TDS	1 2 3 4 5 6 7 8 9 10
MN Diss Solids - TDS (Calc.)	1 2 3 4 5 6 7 8 9 10
GN Turbidity	1 2 3 4 5 6 7 8 9 10
MN Total Alkalinity	1 2 3 4 5 6 7 8 9 10
MN Bicarb/Carb Alkalinity (includes Total Alkalinity)	1 2 3 4 5 6 7 8 9 10
MN Chloride - Cl	1 2 3 4 5 6 7 8 9 10
MN Fluoride - F	1 2 3 4 5 6 7 8 9 10
MN Sulfate - SO4	1 2 3 4 5 6 7 8 9 10
MN Chromium 6 - Cr+6	1 2 3 4 5 6 7 8 9 10
MN Conductivity	1 2 3 4 5 6 7 8 9 10
MN pH	1 2 3 4 5 6 7 8 9 10
GA Chem Oxyg Dem - COD	1 2 3 4 5 6 7 8 9 10
GA Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GN Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GA Total Org Carbon - TOC	1 2 3 4 5 6 7 8 9 10
GA Ammonia - NH3	1 2 3 4 5 6 7 8 9 10
GA Nitrate+Nitrite - NO3+NO2	1 2 3 4 5 6 7 8 9 10
GA Kjeldahl Nitrogen - KN	1 2 3 4 5 6 7 8 9 10
GA Total Phosphorus - TP	1 2 3 4 5 6 7 8 9 10

Chain of Custody

	Relinquished by	Received By	Date / Time
Print Name & Org.	DALE J CORSI, DLZ	Terri Harlin	10/20/16 1058
Signature	Dale J Corsi		
Print Name & Org.	Terri Harlin TAL	Wayne Sampson TAL Bradley Shockley	10/21/16 0985
Signature	Terri Harlin		
Print Name			

Login Sample Receipt Checklist

Client: Michigan Dept. of Environmental Quality

Job Number: 320-22916-1

Login Number: 22916
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	961347
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-23113-1
Client Project/Site: Loud Drive PCE - Wurtsmith - 3500058

For:
Michigan Dept. of Environmental Quality
Constitution Hall 3rd floor SW
525 W. Allegan Street
Lansing, Michigan 48909

Attn: Bob Delaney

Kris Brooks

Authorized for release by:
11/8/2016 9:11:03 PM

Kris Brooks, Project Manager II
(330)966-9790
kris.brooks@testamericainc.com

LINKS

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Table of Contents

Definitions/Glossary

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
*	LCS or LCSD is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-23113-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: Michigan Dept. of Environmental Quality

Project: Loud Drive PCE - Wurtsmith - 3500058

Report Number: 320-23113-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 10/28/2016 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0º C.

PERFLUORINATED HYDROCARBONS

Samples MW-1 10-15 (320-23113-1), MW-1 20-25 (320-23113-2), MW-1 30-35 (320-23113-3), B-4 8-13 (320-23113-4), B-4 18-23 (320-23113-5) and B-4 28-33 (320-23113-6) were analyzed for Perfluorinated Hydrocarbons in accordance with SOP WS-OC-0025. The samples were prepared on 10/31/2016 and analyzed on 11/02/2016 and 11/03/2016.

Perfluorobutanoic acid (PFBA), Perfluorooctane Sulfonamide (FOSA), Perfluorooctanoic acid (PFOA) and Perfluorotetradecanoic acid (PFTeA) were detected in method blank MB 320-135357/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

Perfluorotetradecanoic acid (PFTeA) was detected in method blank MB 320-135358/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Perfluorotetradecanoic acid (PFTeA) failed the recovery criteria high for LCSD 320-135357/3-A. Refer to the QC report for details.

Job ID: 320-23113-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

Due to the excessive amount of sediment in the sample bottles the aqueous portion of these samples was decanted to new bottles prior to spiking and extraction: MW-1 10-15 (320-23113-1), MW-1 20-25 (320-23113-2), MW-1 30-35 (320-23113-3), B-4 18-23 (320-23113-5) and B-4 28-33 (320-23113-6).

Reanalyzed sample for possible carry over from the high concentration of Perfluorohexanoic acid (PFHxA), Perfluorooctanoic acid (PFOA), Perfluorooctane Sulfonate (PFOS) and Perfluorohexanesulfonic acid (PFHxS) in the previous sample: MW-1 10-15 (320-23113-1).

The Isotope Dilution Analyte (IDA) recovery for 13C8 FOSA the following samples is below the method recommended limit: MW-1 10-15 (320-23113-1), MW-1 20-25 (320-23113-2), MW-1 30-35 (320-23113-3), B-4 8-13 (320-23113-4), B-4 18-23 (320-23113-5), B-4 28-33 (320-23113-6), (LCS 320-135358/2-A), (LCSD 320-135358/3-A) and (MB 320-135358/1-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples. The Isotope Dilution Analyte (IDA) recovery for 13C4 PFBA in the following sample is below the method recommended limit: 320-23105-2.

The Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for Perfluorotetradecanoic acid (PFTeA) in the following sample: MW-1 30-35 (320-23113-3). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

The laboratory control sample duplicate (LCSD) for preparation batch 320-135357 and analytical batch 320-136008 recovered outside control limits for the following analyte: Perfluorotetradecanoic acid (PFTeA). This analyte was biased high in the LCSD and detected below the reporting limit in the associated samples; therefore, the data have been reported.

When the following analytes have been reported as a positive detection in the associated samples the value is the summation of both branched and linear isomers: PFHxS, PFOS, PFOA: MW-1 10-15 (320-23113-1), MW-1 20-25 (320-23113-2), MW-1 30-35 (320-23113-3), B-4 8-13 (320-23113-4), B-4 18-23 (320-23113-5) and B-4 28-33 (320-23113-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Client Sample ID: MW-1 10-15 — Lab Sample ID: 320-23113-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5.5	B	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.7		1.9	0.95	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.8		1.9	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.1	J * B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.37	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.8		1.9	0.88	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA) - RA	6.9	B	1.9	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - RA	3.9		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - RA	4.6		1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - RA	6.2		1.9	0.83	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1 20-25 — Lab Sample ID: 320-23113-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.0	J B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.4	B	1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	7.1		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.1		1.9	0.92	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.3		1.9	0.73	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.3	J	1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.0	J * B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.26	J	1.9	0.11	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.5	J	1.9	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11		1.9	0.81	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.68	J	1.9	0.66	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1 30-35 — Lab Sample ID: 320-23113-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.4	B	1.8	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.9	B	1.8	0.68	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.5		1.8	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.9		1.8	0.90	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.8		1.8	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.32	J * B	1.8	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.23	J	1.8	0.11	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.2	J	1.8	0.84	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.6		1.8	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.62	J B	1.8	0.58	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-4 8-13 — Lab Sample ID: 320-23113-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.8		1.6	0.37	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.60	J	1.6	0.60	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.74	J	1.6	0.63	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample ID: B-4 8-13 (Continued) — Lab Sample ID: 320-23113-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.88	J	1.6	0.16	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.27	J	1.6	0.099	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	1.6	0.70	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-4 18-23 — Lab Sample ID: 320-23113-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.5		1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.4		1.9	0.93	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.4	J	1.9	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.3	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.78	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.1		1.9	0.86	ng/L	1		537 (modified)	Total/NA

Client Sample ID: B-4 28-33 — Lab Sample ID: 320-23113-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	6.6		1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.97	J	1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	5.9		1.9	0.93	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	4.5		1.9	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorotridecanoic Acid (PFTriA)	0.55	J	1.9	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.53	J	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.47	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.5		1.9	0.87	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.4		1.9	0.82	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23113-1	MW-1 10-15	Water	10/20/16 00:00	10/28/16 09:45
320-23113-2	MW-1 20-25	Water	10/20/16 00:00	10/28/16 09:45
320-23113-3	MW-1 30-35	Water	10/20/16 00:00	10/28/16 09:45
320-23113-4	B-4 8-13	Water	10/20/16 00:00	10/28/16 09:45
320-23113-5	B-4 18-23	Water	10/20/16 00:00	10/28/16 09:45
320-23113-6	B-4 28-33	Water	10/20/16 00:00	10/28/16 09:45

Client Sample ID: MW-1 10-15

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-1

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**5.5**	**B**	1.9	0.44	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluoropentanoic acid (PFPeA)	**4.7**		1.9	0.95	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluoroheptanoic acid (PFHpA)	**2.8**		1.9	0.77	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluorotetradecanoic acid (PFTeA)	**1.1**	**J * B**	1.9	0.19	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.37**	**J**	1.9	0.12	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluorobutanesulfonic acid (PFBS)	**3.8**		1.9	0.88	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		10/31/16 17:48	11/02/16 21:13	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		10/31/16 17:48	11/02/16 21:13	1
6:2FTS	ND		19	3.7	ng/L		10/31/16 17:48	11/02/16 21:13	1
8:2FTS	ND		19	3.9	ng/L		10/31/16 17:48	11/02/16 21:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*103*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
13C4 PFBA	*48*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
13C5 PFNA	*55*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
13C2 PFDA	*56*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
13C2 PFUnA	*66*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
13C2 PFDoA	*82*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
18O2 PFHxS	*100*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
13C4-PFHpA	*78*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
13C5-PFPeA	*82*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
M2-6:2FTS	*99*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*
M2-8:2FTS	*109*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:13*	*1*

Method: 537 (modified) - Perfluorinated Hydrocarbons - RA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**6.9**	**B**	1.9	0.72	ng/L		10/31/16 17:48	11/03/16 15:07	1
Perfluorooctane Sulfonate (PFOS)	**3.9**		1.9	1.2	ng/L		10/31/16 17:48	11/03/16 15:07	1
Perfluorohexanoic acid (PFHxA)	**4.6**		1.9	0.75	ng/L		10/31/16 17:48	11/03/16 15:07	1
Perfluorohexanesulfonic acid (PFHxS)	**6.2**		1.9	0.83	ng/L		10/31/16 17:48	11/03/16 15:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*105*		*25 - 150*	*10/31/16 17:48*	*11/03/16 15:07*	*1*
13C4 PFOA	*68*		*25 - 150*	*10/31/16 17:48*	*11/03/16 15:07*	*1*
13C2 PFHxA	*86*		*25 - 150*	*10/31/16 17:48*	*11/03/16 15:07*	*1*
18O2 PFHxS	*101*		*25 - 150*	*10/31/16 17:48*	*11/03/16 15:07*	*1*

Client Sample ID: MW-1 20-25

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-2

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.0**	**J B**	1.9	0.43	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorooctanoic acid (PFOA)	**8.4**	**B**	1.9	0.70	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorooctane Sulfonate (PFOS)	**7.1**		1.9	1.2	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluoropentanoic acid (PFPeA)	**2.1**		1.9	0.92	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorohexanoic acid (PFHxA)	**5.3**		1.9	0.73	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluoroheptanoic acid (PFHpA)	**1.3**	**J**	1.9	0.75	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.51	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorotetradecanoic acid (PFTeA)	**1.0**	**J * B**	1.9	0.19	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.26**	**J**	1.9	0.11	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorobutanesulfonic acid (PFBS)	**1.5**	**J**	1.9	0.86	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorohexanesulfonic acid (PFHxS)	**11**		1.9	0.81	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.68**	**J**	1.9	0.66	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		10/31/16 17:48	11/02/16 21:21	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.59	ng/L		10/31/16 17:48	11/02/16 21:21	1
6:2FTS	ND		19	3.6	ng/L		10/31/16 17:48	11/02/16 21:21	1
8:2FTS	ND		19	3.8	ng/L		10/31/16 17:48	11/02/16 21:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*111*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C4 PFOA	*67*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C8 FOSA	*4*	*	*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C4 PFBA	*53*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C2 PFHxA	*82*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C5 PFNA	*59*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C2 PFDA	*61*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C2 PFUnA	*70*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C2 PFDoA	*85*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
18O2 PFHxS	*108*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C4-PFHpA	*74*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
13C5-PFPeA	*82*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
M2-6:2FTS	*101*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*
M2-8:2FTS	*111*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:21*	*1*

Client Sample ID: MW-1 30-35

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-3

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.4**	**B**	1.8	0.42	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorooctanoic acid (PFOA)	**2.9**	**B**	1.8	0.68	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorooctane Sulfonate (PFOS)	**2.5**		1.8	1.2	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluoropentanoic acid (PFPeA)	**1.9**		1.8	0.90	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorohexanoic acid (PFHxA)	**2.8**		1.8	0.72	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.73	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorononanoic acid (PFNA)	ND		1.8	0.60	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorodecanoic acid (PFDA)	ND		1.8	0.40	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.68	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorododecanoic acid (PFDoA)	ND		1.8	0.53	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.8	0.50	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorotetradecanoic acid (PFTeA)	**0.32**	**J * B**	1.8	0.18	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.23**	**J**	1.8	0.11	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.8	0.61	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorobutanesulfonic acid (PFBS)	**1.2**	**J**	1.8	0.84	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorohexanesulfonic acid (PFHxS)	**4.6**		1.8	0.80	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.65	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.8	1.1	ng/L		10/31/16 17:48	11/02/16 21:28	1
Perfluorooctane Sulfonamide (FOSA)	**0.62**	**J B**	1.8	0.58	ng/L		10/31/16 17:48	11/02/16 21:28	1
6:2FTS	ND		18	3.5	ng/L		10/31/16 17:48	11/02/16 21:28	1
8:2FTS	ND		18	3.7	ng/L		10/31/16 17:48	11/02/16 21:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*112*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C4 PFOA	*86*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C8 FOSA	*11*	*	*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C4 PFBA	*52*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C2 PFHxA	*101*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C5 PFNA	*77*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C2 PFDA	*75*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C2 PFUnA	*83*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C2 PFDoA	*93*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
18O2 PFHxS	*109*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C4-PFHpA	*91*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
13C5-PFPeA	*92*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
M2-6:2FTS	*101*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*
M2-8:2FTS	*111*		*25 - 150*	*10/31/16 17:48*	*11/02/16 21:28*	*1*

Client Sample ID: B-4 8-13

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-4

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.8**		1.6	0.37	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorooctanoic acid (PFOA)	**0.60**	**J**	1.6	0.60	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorooctane Sulfonate (PFOS)	ND		1.6	1.0	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluoropentanoic acid (PFPeA)	ND		1.6	0.80	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorohexanoic acid (PFHxA)	**0.74**	**J**	1.6	0.63	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluoroheptanoic acid (PFHpA)	ND		1.6	0.65	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorononanoic acid (PFNA)	ND		1.6	0.53	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorodecanoic acid (PFDA)	ND		1.6	0.36	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluoroundecanoic acid (PFUnA)	ND		1.6	0.60	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorododecanoic acid (PFDoA)	ND		1.6	0.47	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.6	0.44	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorotetradecanoic acid (PFTeA)	**0.88**	**J**	1.6	0.16	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.27**	**J**	1.6	0.099	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.6	0.54	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.6	0.74	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorohexanesulfonic acid (PFHxS)	**1.2**	**J**	1.6	0.70	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.6	0.58	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.6	0.98	ng/L		10/31/16 18:00	11/02/16 23:06	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.6	0.51	ng/L		10/31/16 18:00	11/02/16 23:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*101*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C4 PFOA	*75*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C4 PFBA	*62*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C2 PFHxA	*93*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C5 PFNA	*62*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C2 PFDA	*58*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C2 PFUnA	*65*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C2 PFDoA	*76*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
18O2 PFHxS	*101*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C4-PFHpA	*83*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*
13C5-PFPeA	*92*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:06*	*1*

Client Sample ID: B-4 18-23
Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-5
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.5**		1.9	0.43	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.70	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluoropentanoic acid (PFPeA)	**2.4**		1.9	0.93	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorohexanoic acid (PFHxA)	**1.4**	**J**	1.9	0.74	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.75	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	1.9	0.19	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.78**	**J**	1.9	0.12	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorobutanesulfonic acid (PFBS)	**2.1**		1.9	0.86	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.81	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		10/31/16 18:00	11/02/16 23:13	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		10/31/16 18:00	11/02/16 23:13	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*113*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C4 PFOA	*77*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C8 FOSA	*4*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C4 PFBA	*69*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C2 PFHxA	*104*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C5 PFNA	*63*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C2 PFDA	*56*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C2 PFUnA	*60*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C2 PFDoA	*72*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
18O2 PFHxS	*110*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C4-PFHpA	*91*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*
13C5-PFPeA	*104*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:13*	*1*

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Client Sample ID: B-4 28-33
Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-6
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**6.6**		1.9	0.43	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorooctanoic acid (PFOA)	**0.97**	**J**	1.9	0.71	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluoropentanoic acid (PFPeA)	**5.9**		1.9	0.93	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorohexanoic acid (PFHxA)	**4.5**		1.9	0.74	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorotridecanoic Acid (PFTriA)	**0.55**	**J**	1.9	0.52	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorotetradecanoic acid (PFTeA)	**0.53**	**J**	1.9	0.19	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.47**	**J**	1.9	0.12	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorobutanesulfonic acid (PFBS)	**2.5**		1.9	0.87	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorohexanesulfonic acid (PFHxS)	**5.4**		1.9	0.82	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		10/31/16 18:00	11/02/16 23:21	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		10/31/16 18:00	11/02/16 23:21	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*111*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C4 PFOA	*70*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C4 PFBA	*68*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C2 PFHxA	*97*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C5 PFNA	*59*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C2 PFDA	*60*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C2 PFUnA	*74*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C2 PFDoA	*84*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
18O2 PFHxS	*105*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C4-PFHpA	*85*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*
13C5-PFPeA	*97*		*25 - 150*	*10/31/16 18:00*	*11/02/16 23:21*	*1*

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C4 PFOS (25-150)	3C4 PFOA (25-150)	3C8 FOSA (25-150)	3C4 PFBA (25-150)	3C2 PFHx (25-150)	3C5 PFNA (25-150)	3C2 PFDA (25-150)	3C2 PFUn (25-150)
320-23113-1	MW-1 10-15	103		3 *	48		55	56	66
320-23113-1 - RA	MW-1 10-15	105	68			86			
320-23113-2	MW-1 20-25	111	67	4 *	53	82	59	61	70
320-23113-3	MW-1 30-35	112	86	11 *	52	101	77	75	83
320-23113-4	B-4 8-13	101	75	3 *	62	93	62	58	65
320-23113-5	B-4 18-23	113	77	4 *	69	104	63	56	60
320-23113-6	B-4 28-33	111	70	3 *	68	97	59	60	74
LCS 320-135357/2-A	Lab Control Sample	103	100	54	104	95	100	107	105
LCS 320-135358/2-A	Lab Control Sample	107	114	17 *	112	106	112	111	109
LCSD 320-135357/3-A	Lab Control Sample Dup	99	101	66	104	95	101	105	104
LCSD 320-135358/3-A	Lab Control Sample Dup	103	103	9 *	105	100	102	111	106
MB 320-135357/1-A	Method Blank	103	106	78	106	97	104	108	105
MB 320-135358/1-A	Method Blank	102	102	10 *	104	92	107	112	112

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C2 PFDoA (25-150)	18O2 PFHxS (25-150)	13C4-PFHpA (25-150)	13C5-PFPeA (25-150)	M2-6:2FTS (25-150)	M2-8:2FTS (25-150)		
320-23113-1	MW-1 10-15	82	100	78	82	99	109		
320-23113-1 - RA	MW-1 10-15		101						
320-23113-2	MW-1 20-25	85	108	74	82	101	111		
320-23113-3	MW-1 30-35	93	109	91	92	101	111		
320-23113-4	B-4 8-13	76	101	83	92				
320-23113-5	B-4 18-23	72	110	91	104				
320-23113-6	B-4 28-33	84	105	85	97				
LCS 320-135357/2-A	Lab Control Sample	102	100	95	100	89	103		
LCS 320-135358/2-A	Lab Control Sample	107	106	106	111				
LCSD 320-135357/3-A	Lab Control Sample Dup	106	100	97	101	83	97		
LCSD 320-135358/3-A	Lab Control Sample Dup	105	102	102	104				
MB 320-135357/1-A	Method Blank	100	104	102	102	83	95		
MB 320-135358/1-A	Method Blank	108	102	98	101				

Surrogate Legend

13C4 PFOS = 13C4 PFOS
13C4 PFOA = 13C4 PFOA
13C8 FOSA = 13C8 FOSA
13C4 PFBA = 13C4 PFBA
13C2 PFHxA = 13C2 PFHxA
13C5 PFNA = 13C5 PFNA
13C2 PFDA = 13C2 PFDA
13C2 PFUnA = 13C2 PFUnA
13C2 PFDoA = 13C2 PFDoA
18O2 PFHxS = 18O2 PFHxS
13C4-PFHpA = 13C4-PFHpA
13C5-PFPeA = 13C5-PFPeA
M2-6:2FTS = M2-6:2FTS
M2-8:2FTS = M2-8:2FTS

Method: 537 (modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-135357/1-A
Matrix: Water
Analysis Batch: 136008

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 135357

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.760	J	2.0	0.46	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorooctanoic acid (PFOA)	1.09	J	2.0	0.75	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorotetradecanoic acid (PFTeA)	0.549	J	2.0	0.20	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/31/16 17:48	11/03/16 14:45	1
Perfluorooctane Sulfonamide (FOSA)	0.828	J	2.0	0.64	ng/L		10/31/16 17:48	11/03/16 14:45	1
6:2FTS	ND		20	3.8	ng/L		10/31/16 17:48	11/03/16 14:45	1
8:2FTS	ND		20	4.0	ng/L		10/31/16 17:48	11/03/16 14:45	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*103*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C4 PFOA	*106*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C8 FOSA	*78*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C4 PFBA	*106*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C2 PFHxA	*97*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C5 PFNA	*104*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C2 PFDA	*108*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C2 PFUnA	*105*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C2 PFDoA	*100*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
18O2 PFHxS	*104*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C4-PFHpA	*102*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
13C5-PFPeA	*102*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
M2-6:2FTS	*83*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*
M2-8:2FTS	*95*		*25 - 150*	*10/31/16 17:48*	*11/03/16 14:45*	*1*

Lab Sample ID: LCS 320-135357/2-A
Matrix: Water
Analysis Batch: 136008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135357

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	47.1		ng/L		118	74 - 138
Perfluorooctanoic acid (PFOA)	40.0	41.9		ng/L		105	63 - 141

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-135357/2-A
Matrix: Water
Analysis Batch: 136008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135357

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctane Sulfonate (PFOS)	37.1	38.7		ng/L		104	47 - 162
Perfluoropentanoic acid (PFPeA)	40.0	41.1		ng/L		103	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	42.8		ng/L		107	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	42.9		ng/L		107	63 - 135
Perfluorononanoic acid (PFNA)	40.0	45.4		ng/L		113	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	41.8		ng/L		105	66 - 141
Perfluoroundecanoic acid (PFUnA)	40.0	39.2		ng/L		98	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	43.0		ng/L		107	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	46.4		ng/L		116	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	51.5		ng/L		129	47 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.4		ng/L		114	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	48.6		ng/L		121	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	36.3		ng/L		103	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.8		ng/L		107	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.1		ng/L		108	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	39.2		ng/L		102	35 - 157
Perfluorooctane Sulfonamide (FOSA)	40.0	46.9		ng/L		117	59 - 163
6:2FTS	37.9	41.7		ng/L		110	60 - 140
8:2FTS	38.3	43.9		ng/L		115	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOS	*103*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C8 FOSA	*54*		*25 - 150*
13C4 PFBA	*104*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*
13C5 PFNA	*100*		*25 - 150*
13C2 PFDA	*107*		*25 - 150*
13C2 PFUnA	*105*		*25 - 150*
13C2 PFDoA	*102*		*25 - 150*
18O2 PFHxS	*100*		*25 - 150*
13C4-PFHpA	*95*		*25 - 150*
13C5-PFPeA	*100*		*25 - 150*
M2-6:2FTS	*89*		*25 - 150*
M2-8:2FTS	*103*		*25 - 150*

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-135357/3-A
Matrix: Water
Analysis Batch: 136008

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 135357

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	47.2		ng/L		118	74 - 138	0	30
Perfluorooctanoic acid (PFOA)	40.0	40.9		ng/L		102	63 - 141	2	30
Perfluorooctane Sulfonate (PFOS)	37.1	39.5		ng/L		106	47 - 162	2	30
Perfluoropentanoic acid (PFPeA)	40.0	40.4		ng/L		101	69 - 134	2	30
Perfluorohexanoic acid (PFHxA)	40.0	43.6		ng/L		109	70 - 136	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	42.3		ng/L		106	63 - 135	1	30
Perfluorononanoic acid (PFNA)	40.0	43.9		ng/L		110	71 - 140	3	30
Perfluorodecanoic acid (PFDA)	40.0	41.7		ng/L		104	66 - 141	0	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.4		ng/L		103	68 - 139	5	30
Perfluorododecanoic acid (PFDoA)	40.0	41.8		ng/L		105	71 - 139	3	30
Perfluorotridecanoic Acid (PFTriA)	40.0	44.8		ng/L		112	51 - 139	4	30
Perfluorotetradecanoic acid (PFTeA)	40.0	53.2	*	ng/L		133	47 - 130	3	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.3		ng/L		111	50 - 150	2	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	47.6		ng/L		119	50 - 150	2	30
Perfluorobutanesulfonic acid (PFBS)	35.4	39.4		ng/L		111	55 - 147	8	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	39.1		ng/L		108	58 - 138	1	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	42.1		ng/L		110	32 - 170	2	30
Perfluorodecanesulfonic acid (PFDS)	38.6	40.8		ng/L		106	35 - 157	4	30
Perfluorooctane Sulfonamide (FOSA)	40.0	46.7		ng/L		117	59 - 163	0	30
6:2FTS	37.9	44.7		ng/L		118	60 - 140	7	30
8:2FTS	38.3	45.3		ng/L		118	60 - 140	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOS	*99*		*25 - 150*
13C4 PFOA	*101*		*25 - 150*
13C8 FOSA	*66*		*25 - 150*
13C4 PFBA	*104*		*25 - 150*
13C2 PFHxA	*95*		*25 - 150*
13C5 PFNA	*101*		*25 - 150*
13C2 PFDA	*105*		*25 - 150*
13C2 PFUnA	*104*		*25 - 150*
13C2 PFDoA	*106*		*25 - 150*
18O2 PFHxS	*100*		*25 - 150*
13C4-PFHpA	*97*		*25 - 150*
13C5-PFPeA	*101*		*25 - 150*
M2-6:2FTS	*83*		*25 - 150*
M2-8:2FTS	*97*		*25 - 150*

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: MB 320-135358/1-A
Matrix: Water
Analysis Batch: 136190

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 135358

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.46	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorotetradecanoic acid (PFTeA)	0.745	J	2.0	0.20	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/31/16 18:00	11/04/16 12:49	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		10/31/16 18:00	11/04/16 12:49	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*102*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C4 PFOA	*102*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C8 FOSA	*10*	*	*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C4 PFBA	*104*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C2 PFHxA	*92*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C5 PFNA	*107*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C2 PFDA	*112*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C2 PFUnA	*112*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C2 PFDoA	*108*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
18O2 PFHxS	*102*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C4-PFHpA	*98*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*
13C5-PFPeA	*101*		*25 - 150*	*10/31/16 18:00*	*11/04/16 12:49*	*1*

Lab Sample ID: LCS 320-135358/2-A
Matrix: Water
Analysis Batch: 135762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135358

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	44.3		ng/L		111	74 - 138
Perfluorooctanoic acid (PFOA)	40.0	37.2		ng/L		93	63 - 141
Perfluorooctane Sulfonate (PFOS)	37.1	36.9		ng/L		99	47 - 162
Perfluoropentanoic acid (PFPeA)	40.0	37.8		ng/L		95	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	41.0		ng/L		102	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	40.9		ng/L		102	63 - 135

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-135358/2-A
Matrix: Water
Analysis Batch: 135762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135358

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	40.7		ng/L		102	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.0		ng/L		100	66 - 141
Perfluoroundecanoic acid (PFUnA)	40.0	38.3		ng/L		96	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	40.0		ng/L		100	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	43.4		ng/L		109	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	50.2		ng/L		125	47 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	44.2		ng/L		111	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	45.6		ng/L		114	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	38.5		ng/L		109	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	36.6		ng/L		101	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.7		ng/L		104	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	36.5		ng/L		95	35 - 157
Perfluorooctane Sulfonamide (FOSA)	40.0	41.0		ng/L		103	59 - 163

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOS	*107*		*25 - 150*
13C4 PFOA	*114*		*25 - 150*
13C8 FOSA	*17*	*	*25 - 150*
13C4 PFBA	*112*		*25 - 150*
13C2 PFHxA	*106*		*25 - 150*
13C5 PFNA	*112*		*25 - 150*
13C2 PFDA	*111*		*25 - 150*
13C2 PFUnA	*109*		*25 - 150*
13C2 PFDoA	*107*		*25 - 150*
18O2 PFHxS	*106*		*25 - 150*
13C4-PFHpA	*106*		*25 - 150*
13C5-PFPeA	*111*		*25 - 150*

Lab Sample ID: LCSD 320-135358/3-A
Matrix: Water
Analysis Batch: 135762

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 135358

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	44.8		ng/L		112	74 - 138	1	30
Perfluorooctanoic acid (PFOA)	40.0	40.5		ng/L		101	63 - 141	8	30
Perfluorooctane Sulfonate (PFOS)	37.1	37.9		ng/L		102	47 - 162	3	30
Perfluoropentanoic acid (PFPeA)	40.0	39.5		ng/L		99	69 - 134	4	30
Perfluorohexanoic acid (PFHxA)	40.0	41.7		ng/L		104	70 - 136	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.8		ng/L		104	63 - 135	2	30

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-135358/3-A
Matrix: Water
Analysis Batch: 135762

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 135358

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorononanoic acid (PFNA)			40.0	44.6		ng/L		111	71 - 140	9	30
Perfluorodecanoic acid (PFDA)			40.0	39.2		ng/L		98	66 - 141	2	30
Perfluoroundecanoic acid (PFUnA)			40.0	38.6		ng/L		96	68 - 139	1	30
Perfluorododecanoic acid (PFDoA)			40.0	40.7		ng/L		102	71 - 139	2	30
Perfluorotridecanoic Acid (PFTriA)			40.0	44.5		ng/L		111	51 - 139	2	30
Perfluorotetradecanoic acid (PFTeA)			40.0	51.1		ng/L		128	47 - 130	2	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	43.4		ng/L		109	50 - 150	2	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	45.5		ng/L		114	50 - 150	0	30
Perfluorobutanesulfonic acid (PFBS)			35.4	40.8		ng/L		115	55 - 147	6	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	38.1		ng/L		105	58 - 138	4	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	41.1		ng/L		108	32 - 170	3	30
Perfluorodecanesulfonic acid (PFDS)			38.6	38.1		ng/L		99	35 - 157	4	30
Perfluorooctane Sulfonamide (FOSA)			40.0	43.0		ng/L		108	59 - 163	5	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOS	*103*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C8 FOSA	*9*	*	*25 - 150*
13C4 PFBA	*105*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C5 PFNA	*102*		*25 - 150*
13C2 PFDA	*111*		*25 - 150*
13C2 PFUnA	*106*		*25 - 150*
13C2 PFDoA	*105*		*25 - 150*
18O2 PFHxS	*102*		*25 - 150*
13C4-PFHpA	*102*		*25 - 150*
13C5-PFPeA	*104*		*25 - 150*

LCMS

Prep Batch: 135357

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23113-1 - RA	MW-1 10-15	Total/NA	Water	3535	
320-23113-1	MW-1 10-15	Total/NA	Water	3535	
320-23113-2	MW-1 20-25	Total/NA	Water	3535	
320-23113-3	MW-1 30-35	Total/NA	Water	3535	
MB 320-135357/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-135357/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-135357/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 135358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23113-4	B-4 8-13	Total/NA	Water	3535	
320-23113-5	B-4 18-23	Total/NA	Water	3535	
320-23113-6	B-4 28-33	Total/NA	Water	3535	
MB 320-135358/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-135358/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-135358/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 135762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23113-1	MW-1 10-15	Total/NA	Water	537 (modified)	135357
320-23113-2	MW-1 20-25	Total/NA	Water	537 (modified)	135357
320-23113-3	MW-1 30-35	Total/NA	Water	537 (modified)	135357
320-23113-4	B-4 8-13	Total/NA	Water	537 (modified)	135358
320-23113-5	B-4 18-23	Total/NA	Water	537 (modified)	135358
320-23113-6	B-4 28-33	Total/NA	Water	537 (modified)	135358
LCS 320-135358/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	135358
LCSD 320-135358/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	135358

Analysis Batch: 136008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23113-1 - RA	MW-1 10-15	Total/NA	Water	537 (modified)	135357
MB 320-135357/1-A	Method Blank	Total/NA	Water	537 (modified)	135357
LCS 320-135357/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	135357
LCSD 320-135357/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	135357

Analysis Batch: 136190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-135358/1-A	Method Blank	Total/NA	Water	537 (modified)	135358

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Client Sample ID: MW-1 10-15

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.8 mL	0.50 mL	135357	10/31/16 17:48	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 21:13	SBC	TAL SAC
Total/NA	Prep	3535	RA		260.8 mL	0.50 mL	135357	10/31/16 17:48	JER	TAL SAC
Total/NA	Analysis	537 (modified)	RA	1			136008	11/03/16 15:07	SBC	TAL SAC

Client Sample ID: MW-1 20-25

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			268.1 mL	0.50 mL	135357	10/31/16 17:48	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 21:21	SBC	TAL SAC

Client Sample ID: MW-1 30-35

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			273.5 mL	0.50 mL	135357	10/31/16 17:48	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 21:28	SBC	TAL SAC

Client Sample ID: B-4 8-13

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			309.8 mL	0.50 mL	135358	10/31/16 18:00	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 23:06	SBC	TAL SAC

Client Sample ID: B-4 18-23

Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			267.2 mL	0.50 mL	135358	10/31/16 18:00	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 23:13	SBC	TAL SAC

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Client Sample ID: B-4 28-33
Date Collected: 10/20/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23113-6
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.5 mL	0.50 mL	135358	10/31/16 18:00	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 23:21	SBC	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-16 *
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17
Illinois	NELAP	5	200004	07-31-17
Kansas	NELAP	7	E-10336	01-31-17
Kentucky (UST)	State Program	4	58	02-23-17
Kentucky (WW)	State Program	4	98016	12-31-16 *
Minnesota	NELAP	5	039-999-348	12-31-16 *
Minnesota (Petrofund)	State Program	1	3506	07-31-17
Nevada	State Program	9	OH-000482008A	07-31-17
New Jersey	NELAP	2	OH001	06-30-17
New York	NELAP	2	10975	03-31-17
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Loud Drive PCE - Wurtsmith - 3500058

TestAmerica Job ID: 320-23113-1

Laboratory: TestAmerica Canton (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-13-00319	11-26-16 *
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-17
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

* Certification renewal pending - certification considered valid.

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
	Loud Drive PCE	WATER

Site Code/Project Number: 35000152	AY: 17	CC Email 1: pincumbej	Project TAT Days:	Sample Collector: Jeff Pincumbe
Dept-Division-District: DEQ-RRD-Saginaw Bay	Index: 44031	CC Email 2: shireyb	Project Due Date:	Sample Collector Phone: 517-335-6418
State Project Manager: Mike Jury	PCA: 30740	CC Email 3:		Contract Firm:
State Project Manager Email: jurym1	Project: 457179	Overflow Lab Choice 1: TEST AMERICA	Accept Analysis hold time codes	Contract Firm Primary Contact:
State Project Manager Phone: 989-894-6255	Phase: 00	Overflow Lab Choice 2:		Primary Contact Phone:

	Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1		MW-1 10-15'	10/27/16			
2		MW-1 20-25				FOR PFC ANALYSES
3		MW-1 30-35				
4		B-4 8-13				
5		B-4 18-23				
6		B-4 28-33				
7						
8						
9						
10						

320-23113 Chain of Custody

Michigan

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ORGANIC CHEMISTRY

VOA - Volatile Organic Acidic
Volatiles - Full List 1 2 3 4 5 6 7 8 9 10
BTEX/MTBE/TMB only 1 2 3 4 5 6 7 8 9 10
Chlorinated only 1 2 3 4 5 6 7 8 9 10
GRO 1 2 3 4 5 6 7 8 9 10
1,4 Dioxane 1 2 3 4 5 6 7 8 9 10

METH - Methane, Ethane, Ethene
Methane, Ethane, Ethene 1 2 3 4 5 6 7 8 9 10

ON - Pesticides, PCBs
Pesticides & PCBs 1 2 3 4 5 6 7 8 9 10
Pesticides only 1 2 3 4 5 6 7 8 9 10
PCBs only 1 2 3 4 5 6 7 8 9 10
Toxaphene 1 2 3 4 5 6 7 8 9 10
Chlordane 1 2 3 4 5 6 7 8 9 10

BNA - Base Neutral Acids
BNAs 1 2 3 4 5 6 7 8 9 10
Benzidines 1 2 3 4 5 6 7 8 9 10
PNAs only 1 2 3 4 5 6 7 8 9 10
BNs only 1 2 3 4 5 6 7 8 9 10
Acids only 1 2 3 4 5 6 7 8 9 10

Organic Specialty Requests
Library search - Volatiles 1 2 3 4 5 6 7 8 9 10
Library search - SemiVols 1 2 3 4 5 6 7 8 9 10
Finger Print 1 2 3 4 5 6 7 8 9 10
DRO / ORO 1 2 3 4 5 6 7 8 9 10

METALS CHEMISTRY PACKAGES

OpMemo2 - Total 1 2 3 4 5 6 7 8 9 10
OpMemo2 - Dissolved 1 2 3 4 5 6 7 8 9 10
(Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)
Michigan10 - Total 1 2 3 4 5 6 7 8 9 10
Michigan10 - Dissolved 1 2 3 4 5 6 7 8 9 10
(As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)

MAD - DISSOLVED METALS

Diss - Silver - Ag 1 2 3 4 5 6 7 8 9 10
Diss - Aluminum - Al 1 2 3 4 5 6 7 8 9 10
Diss - Arsenic - As 1 2 3 4 5 6 7 8 9 10
Diss - Boron - B 1 2 3 4 5 6 7 8 9 10
Diss - Barium - Ba 1 2 3 4 5 6 7 8 9 10
Diss - Beryllium - Be 1 2 3 4 5 6 7 8 9 10
Diss - Cadmium - Cd 1 2 3 4 5 6 7 8 9 10
Diss - Cobalt - Co 1 2 3 4 5 6 7 8 9 10
Diss - Chromium - Cr 1 2 3 4 5 6 7 8 9 10
Diss - Copper - Cu 1 2 3 4 5 6 7 8 9 10
Diss - Iron - Fe 1 2 3 4 5 6 7 8 9 10
Diss - Mercury - Hg 1 2 3 4 5 6 7 8 9 10
Diss - Lithium - Li 1 2 3 4 5 6 7 8 9 10
Diss - Manganese - Mn 1 2 3 4 5 6 7 8 9 10
Diss - Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10
Diss - Nickel - Ni 1 2 3 4 5 6 7 8 9 10
Diss - Lead - Pb 1 2 3 4 5 6 7 8 9 10
Diss - Antimony - Sb 1 2 3 4 5 6 7 8 9 10
Diss - Selenium - Se 1 2 3 4 5 6 7 8 9 10
Diss - Strontium - Sr 1 2 3 4 5 6 7 8 9 10
Diss - Titanium - Ti 1 2 3 4 5 6 7 8 9 10
Diss - Thallium - Tl 1 2 3 4 5 6 7 8 9 10
Diss - Uranium - U 1 2 3 4 5 6 7 8 9 10
Diss - Vanadium - V 1 2 3 4 5 6 7 8 9 10
Diss - Zinc - Zn 1 2 3 4 5 6 7 8 9 10
Diss - Calcium - Ca 1 2 3 4 5 6 7 8 9 10
Diss - Potassium - K 1 2 3 4 5 6 7 8 9 10
Diss - Magnesium - Mg 1 2 3 4 5 6 7 8 9 10
Diss - Sodium - Na 1 2 3 4 5 6 7 8 9 10
Diss - Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10

MD - Metals Dissolved
Lab Filtration 1 2 3 4 5 6 7 8 9 10

MA - TOTAL METALS

Silver - Ag 1 2 3 4 5 6 7 8 9 10
Aluminum - Al 1 2 3 4 5 6 7 8 9 10
Arsenic - As 1 2 3 4 5 6 7 8 9 10
Boron - B 1 2 3 4 5 6 7 8 9 10
Barium - Ba 1 2 3 4 5 6 7 8 9 10
Beryllium - Be 1 2 3 4 5 6 7 8 9 10
Cadmium - Cd 1 2 3 4 5 6 7 8 9 10
Cobalt - Co 1 2 3 4 5 6 7 8 9 10
Chromium - Cr 1 2 3 4 5 6 7 8 9 10
Copper - Cu 1 2 3 4 5 6 7 8 9 10
Iron - Fe 1 2 3 4 5 6 7 8 9 10
Mercury - Hg 1 2 3 4 5 6 7 8 9 10
Lithium - Li 1 2 3 4 5 6 7 8 9 10
Manganese - Mn 1 2 3 4 5 6 7 8 9 10
Molybdenum - Mo 1 2 3 4 5 6 7 8 9 10
Nickel - Ni 1 2 3 4 5 6 7 8 9 10
Lead - Pb 1 2 3 4 5 6 7 8 9 10
Antimony - Sb 1 2 3 4 5 6 7 8 9 10
Selenium - Se 1 2 3 4 5 6 7 8 9 10
Strontium - Sr 1 2 3 4 5 6 7 8 9 10
Titanium - Ti 1 2 3 4 5 6 7 8 9 10
Thallium - Tl 1 2 3 4 5 6 7 8 9 10
Uranium - U 1 2 3 4 5 6 7 8 9 10
Vanadium - V 1 2 3 4 5 6 7 8 9 10
Zinc - Zn 1 2 3 4 5 6 7 8 9 10
Calcium - Ca 1 2 3 4 5 6 7 8 9 10
Potassium - K 1 2 3 4 5 6 7 8 9 10
Magnesium - Mg 1 2 3 4 5 6 7 8 9 10
Sodium - Na 1 2 3 4 5 6 7 8 9 10
Hardness - Ca, Mg 1 2 3 4 5 6 7 8 9 10

LHG - Low Level Mercury
Mercury Low Level - Hg 1 2 3 4 5 6 7 8 9 10

GENERAL CHEMISTRY

GB Total Cyanide - CN 1 2 3 4 5 6 7 8 9 10
GB Amenable Cyanide - CN 1 2 3 4 5 6 7 8 9 10
GCN Available Cyanide - CN 1 2 3 4 5 6 7 8 9 10
CA Chlorophyll 1 2 3 4 5 6 7 8 9 10
GN Ortho Phosphate - OP 1 2 3 4 5 6 7 8 9 10
GN Nitrite - NO_2 1 2 3 4 5 6 7 8 9 10
GN Nitrate - NO_3 (Calc.) 1 2 3 4 5 6 7 8 9 10
GN Suspended Solids - SS 1 2 3 4 5 6 7 8 9 10
GN Dissolved Solids - TDS 1 2 3 4 5 6 7 8 9 10
MN Diss Solids - TDS (Calc.) 1 2 3 4 5 6 7 8 9 10
GN Turbidity 1 2 3 4 5 6 7 8 9 10
MN Total Alkalinity 1 2 3 4 5 6 7 8 9 10
MN Bicarb/Carb Alkalinity (includes Total Alkalinity) 1 2 3 4 5 6 7 8 9 10
MN Chloride - Cl 1 2 3 4 5 6 7 8 9 10
MN Fluoride - F 1 2 3 4 5 6 7 8 9 10
MN Sulfate - SO4 1 2 3 4 5 6 7 8 9 10
MN Chromium 6 - Cr+6 1 2 3 4 5 6 7 8 9 10
MN Conductivity 1 2 3 4 5 6 7 8 9 10
MN pH 1 2 3 4 5 6 7 8 9 10
GA Chem Oxyg Dem - COD 1 2 3 4 5 6 7 8 9 10
GA Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved) 1 2 3 4 5 6 7 8 9 10
GN Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved) 1 2 3 4 5 6 7 8 9 10
GA Total Org Carbon - TOC 1 2 3 4 5 6 7 8 9 10
GA Ammonia - NH3 1 2 3 4 5 6 7 8 9 10
GA Nitrate+Nitrite - NO3+NO2 1 2 3 4 5 6 7 8 9 10
GA Kjeldahl Nitrogen - KN 1 2 3 4 5 6 7 8 9 10
GA Total Phosphorus - TP 1 2 3 4 5 6 7 8 9 10

Chain of Custody

	Relinquished by	Received By	Date / Time
Print Name & Org	Jeff Pincumbe - MDEQ	Melissa Sandoval	
Signature			10/27/16 1545
Print Name & Org	Joshua Pinns MDEQ	MARK JORDAN	10/27/16 1157
Signature	Joshua R Pinns	TESTAMERICA	
Print Name & Org	MARK JORDAN TESTAMERICA	Troy G. Tuper TAS	10/28/16 0925
Signature			

1.0

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

320-23113 Field Sheet

Job

Tracking #: Fed Ex Std. Overnight 6209 0767 6178

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes:

Therm. ID 11 / (12) / AK / Other

Cooler Custody Seal: 960382

Sample Custody Seal: —

Temp: Observed 1.9 °C

Corrected: 1.0 °C

From: Temp Blank ☐ Sample ☒

NCM : Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☐	☐	☐
Sample preservatives verified?	☐	☐	☒

Initial / Date: BW 10/28/16

Do Not Lift Using This Tag

FedEx

Temperature Controlle

IF THIS SHIPMENT IS DELAYED IN TRANSIT, STORE AS INDICATED.

- [ ] Healthcare
- [ ] Room Temperature 15 to 25 C / 59 to 77 F
- [x] Refrigerated 2 to 8 C / 36 to 47 F
- [ ] Frozen -25 to -10 C / -13 to 14 F

ORIGIN ID:DEOA (810) 229-2763
SHIPPING DEPARTMENT
TESTAMERICA
10448 CITATION DRIVE
SUITE 200
BRIGHTON, MI 48116
UNITED STATES US

SHIP DATE: 27OCT16
ACTWGT: 43.10 LB
CAD: 0183192/CAFE3009

BILL RECIPIENT

TO SAMPLE RECEIVING
TESTAMERICA INC.
880 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605

REF:
INV:
PO: DEPT:

FedEx Express

TRK# 0201 6209 0767 6178

FRI - 28 OCT 3:00P
STANDARD OVERNIGHT

XH BLUA

95605
CA-US SMF

Custody Seal

10/27/14
DATE

SIGNATURE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
960352

TestAmerica Billing Sheet

Client: MDEQ Field Personnel: MARK JORDAN

Site: SAGINAW BAY Date: 10/27/16

X Pick Up ____ City Split ____ City Split & Pour Up

____ Sampling ____ Rush ____ Same Day

____ On Site (Hrs) ____ Available CN (Field)

____ Drive Time (Hrs) ____ Truck Fee ____ Milage(out of area)

____ Composite ____ Grab

Equipment Used

____ ISCO/Composite Sampler ____ Tyvek® Suit

____ Flow Meter ____ SS Auger ____

____ Tubing (Ft.) ____ SS Shovel

____ Rope (Ft.) ____ Disposable Slot Sampler

____ Coliwasa ____ Drum Coring Bit

____ Disposable Bailer ____ 3ft. ____ 6ft. ____ 7ft.

____ pH Meter ____ Air Comp. & Control Box

____ Misc./Other: _____

Hytrek, Cheryl

From: Brooks, Kris
Sent: Friday, October 28, 2016 4:51 PM
To: Sacramento - Sample Receiving; Hrabak, Robert
Subject: RE: MDEQ samples that should have been received today
Attachments: default@testamericainc.com_20161028_124050.pdf

Hello all,

For these samples please log the two COC separately if possible. For the COC with project name Loud Drive PCE log the samples that start with MW-1 with the PFC Expanded list + FTS and the remaining samples with the PFC Expanded list only.

Let me know if you have any questions.

Thanks,

Kris Brooks
Project Manager/Manager of Project Assistance
330-966-9790

From: Brooks, Kris
Sent: Friday, October 28, 2016 3:32 PM
To: Sacramento - Sample Receiving; 'Hrabak, Robert'
Subject: MDEQ samples that should have been received today

Hello,

Please log the samples for the attached COC in under project 24006344.

Robert these are more samples for the Wurtsmith project.

Thank you,

KRIS BROOKS
Project Manager, Manager of Project Assistance

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

4101 Shuffel Street NW
North Canton, OH 44720
Tel 330-966-9790
www.testamericainc.com

Login Sample Receipt Checklist

Client: Michigan Dept. of Environmental Quality

Job Number: 320-23113-1

Login Number: 23113
List Number: 1
Creator: Hytrek, Cheryl

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	Refer to Job Narrative for details.
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

TestAmerica Job ID: 320-23603-1
Client Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

For:
Michigan Dept. of Environmental Quality
Constitution Hall 3rd floor SW
525 W. Allegan Street
Lansing, Michigan 48909

Attn: Bob Delaney

Kris Brooks

Authorized for release by:
12/15/2016 7:39:49 PM

Kris Brooks, Project Manager II
(330)966-9790
kris.brooks@testamericainc.com

Table of Contents

Definitions/Glossary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*	Isotope Dilution analyte is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 320-23603-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: Michigan Dept. of Environmental Quality

Project: Wurtsmith - 3500058 - Loud Drive PCE

Report Number: 320-23603-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

The Perfluorinated Hydrocarbons analysis was performed at the TestAmerica Sacramento Laboratory.

TestAmerica Canton attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 11/17/2016 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was -0.7º C.

Receipt Exceptions

The following sample(s) was received at the laboratory outside the required temperature criteria:
The temperature taken at receipt for the temperatures was -0.7 C.
The samples were not frozen upon receipt.

Samples 1, 2, 3, and 5 were received with no collection times on either the CoC or the containers.

MW-1 (320-23603-1), MW-3 (320-23603-2), MW-3 DUP (320-23603-3) and MW-5 (320-23603-5)

The following sample was received at the laboratory without a sample collection time documented on the chain of custody: MW-4 (320-23603-4).

Job ID: 320-23603-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

Sample #4 received with no time listed on the CoC.
Logged in based on the time on the containers

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. COC not relinquished.

PERFLUORINATED HYDROCARBONS

Samples MW-1 (320-23603-1), MW-3 (320-23603-2), MW-3 DUP (320-23603-3), MW-4 (320-23603-4) and MW-5 (320-23603-5) were analyzed for Perfluorinated Hydrocarbons in accordance with SOP WS-OC-0025. The samples were prepared on 11/22/2016 and analyzed on 12/08/2016.

Perfluorotetradecanoic acid (PFTeA) was detected in method blank MB 320-139078/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

The Isotope Dilution Analyte (IDA) recovery for 13C8 FOSA the following samples is below the method recommended limit: MW-1 (320-23603-1), MW-3 (320-23603-2), MW-3 DUP (320-23603-3), MW-4 (320-23603-4), MW-5 (320-23603-5), (LCS 320-139078/2-A), (LCSD 320-139078/3-A) and (MB 320-139078/1-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

The Isotope Dilution Analyte (IDA) recovery for M2-6:2FTS is above the method recommended limit for the following sample: MW-5 (320-23603-5). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Client Sample ID: MW-1 — Lab Sample ID: 320-23603-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.5		2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.1		2.0	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.0		2.0	1.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	2.1		2.0	0.98	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.1		2.0	0.78	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.98	J	2.0	0.80	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.1	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.84	J	2.0	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.8		2.0	0.91	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.1		2.0	0.86	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 320-23603-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.6	J	2.0	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.1		2.0	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.1		2.0	1.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.6		2.0	1.0	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.2		2.0	0.80	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.1	J	2.0	0.82	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.87	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.45	J	2.0	0.13	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	J	2.0	0.93	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.2		2.0	0.88	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 DUP — Lab Sample ID: 320-23603-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.7	J	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.1		1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.6		1.9	0.93	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	3.2		1.9	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.1	J	1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.51	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.12	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	1.7	J	1.9	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.2		1.9	0.82	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-4 — Lab Sample ID: 320-23603-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.5		1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.84	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.53	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	8.2		1.9	0.87	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Client Sample ID: MW-5

Lab Sample ID: 320-23603-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	8.7		1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.76	J	1.9	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.9		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.3	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.60	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	8.0		1.9	0.88	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	7.6		1.9	0.84	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23603-1	MW-1	Water	11/14/16 00:00	11/17/16 09:30
320-23603-2	MW-3	Water	11/14/16 00:00	11/17/16 09:30
320-23603-3	MW-3 DUP	Water	11/14/16 00:00	11/17/16 09:30
320-23603-4	MW-4	Water	11/14/16 11:27	11/17/16 09:30
320-23603-5	MW-5	Water	11/14/16 00:00	11/17/16 09:30

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Client Sample ID: MW-1
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-1
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.5**		2.0	0.45	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorooctanoic acid (PFOA)	**3.1**		2.0	0.74	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorooctane Sulfonate (PFOS)	**5.0**		2.0	1.3	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluoropentanoic acid (PFPeA)	**2.1**		2.0	0.98	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorohexanoic acid (PFHxA)	**2.1**		2.0	0.78	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluoroheptanoic acid (PFHpA)	**0.98**	**J**	2.0	0.80	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.74	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorotetradecanoic acid (PFTeA)	**1.1**	**J B**	2.0	0.20	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.84**	**J**	2.0	0.12	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorobutanesulfonic acid (PFBS)	**2.8**		2.0	0.91	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorohexanesulfonic acid (PFHxS)	**5.1**		2.0	0.86	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		11/22/16 11:47	12/08/16 00:33	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.63	ng/L		11/22/16 11:47	12/08/16 00:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*121*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C4 PFOA	*87*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C4 PFBA	*38*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C2 PFHxA	*99*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C5 PFNA	*65*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C2 PFDA	*54*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C2 PFUnA	*56*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C2 PFDoA	*65*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
18O2 PFHxS	*120*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C4-PFHpA	*109*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*
13C5-PFPeA	*84*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:33*	*1*

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Client Sample ID: MW-3
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-2
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.6**	**J**	2.0	0.47	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorooctanoic acid (PFOA)	**4.1**		2.0	0.76	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorooctane Sulfonate (PFOS)	**2.1**		2.0	1.3	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluoropentanoic acid (PFPeA)	**3.6**		2.0	1.0	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorohexanoic acid (PFHxA)	**3.2**		2.0	0.80	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluoroheptanoic acid (PFHpA)	**1.1**	**J**	2.0	0.82	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.66	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.45	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.76	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.56	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorotetradecanoic acid (PFTeA)	**0.87**	**J B**	2.0	0.20	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.45**	**J**	2.0	0.13	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.68	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorobutanesulfonic acid (PFBS)	**1.7**	**J**	2.0	0.93	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorohexanesulfonic acid (PFHxS)	**3.2**		2.0	0.88	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.72	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		11/22/16 11:47	12/08/16 00:40	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.65	ng/L		11/22/16 11:47	12/08/16 00:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*112*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C4 PFOA	*75*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C4 PFBA	*45*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C2 PFHxA	*92*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C5 PFNA	*59*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C2 PFDA	*56*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C2 PFUnA	*63*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C2 PFDoA	*73*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
18O2 PFHxS	*116*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C4-PFHpA	*100*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*
13C5-PFPeA	*86*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:40*	*1*

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Client Sample ID: MW-3 DUP
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-3
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.7**	**J**	1.9	0.43	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorooctanoic acid (PFOA)	**4.1**		1.9	0.70	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorooctane Sulfonate (PFOS)	**2.2**		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluoropentanoic acid (PFPeA)	**3.6**		1.9	0.93	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorohexanoic acid (PFHxA)	**3.2**		1.9	0.74	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluoroheptanoic acid (PFHpA)	**1.1**	**J**	1.9	0.75	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorotetradecanoic acid (PFTeA)	**0.51**	**J B**	1.9	0.19	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.12**	**J**	1.9	0.12	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorobutanesulfonic acid (PFBS)	**1.7**	**J**	1.9	0.86	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorohexanesulfonic acid (PFHxS)	**3.2**		1.9	0.82	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/22/16 11:47	12/08/16 00:48	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		11/22/16 11:47	12/08/16 00:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*126*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C4 PFOA	*104*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C4 PFBA	*37*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C2 PFHxA	*101*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C5 PFNA	*85*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C2 PFDA	*80*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C2 PFUnA	*83*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C2 PFDoA	*92*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
18O2 PFHxS	*129*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C4-PFHpA	*115*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*
13C5-PFPeA	*82*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:48*	*1*

Client Sample ID: MW-4

Date Collected: 11/14/16 11:27
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-4

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.5**		1.9	0.44	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.94	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.75	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorotetradecanoic acid (PFTeA)	**0.84**	**J B**	1.9	0.19	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.53**	**J**	1.9	0.12	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorobutanesulfonic acid (PFBS)	**8.2**		1.9	0.87	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.83	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 00:55	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		11/22/16 11:47	12/08/16 00:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*128*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C4 PFOA	*74*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C4 PFBA	*63*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C2 PFHxA	*91*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C5 PFNA	*62*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C2 PFDA	*51*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C2 PFUnA	*55*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C2 PFDoA	*63*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
18O2 PFHxS	*130*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C4-PFHpA	*97*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*
13C5-PFPeA	*94*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:55*	*1*

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Client Sample ID: MW-5
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-5
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**8.7**		1.9	0.44	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorooctanoic acid (PFOA)	**0.76**	**J**	1.9	0.72	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorooctane Sulfonate (PFOS)	**2.9**		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.95	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.76	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.77	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	1.9	0.19	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.60**	**J**	1.9	0.12	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorobutanesulfonic acid (PFBS)	**8.0**		1.9	0.88	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorohexanesulfonic acid (PFHxS)	**7.6**		1.9	0.84	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.69	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 01:03	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		11/22/16 11:47	12/08/16 01:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*125*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C4 PFOA	*93*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C4 PFBA	*32*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C2 PFHxA	*101*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C5 PFNA	*71*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C2 PFDA	*53*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C2 PFUnA	*61*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C2 PFDoA	*75*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
18O2 PFHxS	*122*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C4-PFHpA	*116*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*
13C5-PFPeA	*82*		*25 - 150*	*11/22/16 11:47*	*12/08/16 01:03*	*1*

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C4 PFOS (25-150)	3C4 PFOA (25-150)	3C8 FOSA (25-150)	3C4 PFBA (25-150)	3C2 PFHx (25-150)	3C5 PFNA (25-150)	3C2 PFDA (25-150)	3C2 PFUn (25-150)
320-23603-1	MW-1	121	87	2 *	38	99	65	54	56
320-23603-2	MW-3	112	75	2 *	45	92	59	56	63
320-23603-3	MW-3 DUP	126	104	3 *	37	101	85	80	83
320-23603-4	MW-4	128	74	2 *	63	91	62	51	55
320-23603-5	MW-5	125	93	3 *	32	101	71	53	61
LCS 320-139078/2-A	Lab Control Sample	124	127	17 *	124	123	125	121	114
LCSD 320-139078/3-A	Lab Control Sample Dup	113	119	19 *	119	117	118	113	109
MB 320-139078/1-A	Method Blank	123	133	15 *	126	124	131	125	123

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C2 PFDoA (25-150)	18O2 PFHxS (25-150)	13C4-PFHpA (25-150)	13C5-PFPeA (25-150)	M2-6:2FTS (25-150)	M2-8:2FTS (25-150)		
320-23603-1	MW-1	65	120	109	84				
320-23603-2	MW-3	73	116	100	86				
320-23603-3	MW-3 DUP	92	129	115	82				
320-23603-4	MW-4	63	130	97	94				
320-23603-5	MW-5	75	122	116	82				
LCS 320-139078/2-A	Lab Control Sample	113	122	138	126	133	119		
LCSD 320-139078/3-A	Lab Control Sample Dup	108	116	132	117	127	106		
MB 320-139078/1-A	Method Blank	118	126	144	125	136	119		

Surrogate Legend

13C4 PFOS = 13C4 PFOS
13C4 PFOA = 13C4 PFOA
13C8 FOSA = 13C8 FOSA
13C4 PFBA = 13C4 PFBA
13C2 PFHxA = 13C2 PFHxA
13C5 PFNA = 13C5 PFNA
13C2 PFDA = 13C2 PFDA
13C2 PFUnA = 13C2 PFUnA
13C2 PFDoA = 13C2 PFDoA
18O2 PFHxS = 18O2 PFHxS
13C4-PFHpA = 13C4-PFHpA
13C5-PFPeA = 13C5-PFPeA
M2-6:2FTS = M2-6:2FTS
M2-8:2FTS = M2-8:2FTS

Method: 537 (modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-139078/1-A
Matrix: Water
Analysis Batch: 141271

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 139078

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.46	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorotetradecanoic acid (PFTeA)	0.862	J	2.0	0.20	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		11/22/16 11:47	12/08/16 00:10	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		11/22/16 11:47	12/08/16 00:10	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*123*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C4 PFOA	*133*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C8 FOSA	*15*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C4 PFBA	*126*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C2 PFHxA	*124*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C5 PFNA	*131*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C2 PFDA	*125*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C2 PFUnA	*123*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C2 PFDoA	*118*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
18O2 PFHxS	*126*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C4-PFHpA	*144*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*
13C5-PFPeA	*125*		*25 - 150*	*11/22/16 11:47*	*12/08/16 00:10*	*1*

Lab Sample ID: LCS 320-139078/2-A
Matrix: Water
Analysis Batch: 141271

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 139078

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	41.6		ng/L		104	74 - 138
Perfluorooctanoic acid (PFOA)	40.0	37.7		ng/L		94	63 - 141
Perfluorooctane Sulfonate (PFOS)	37.1	34.3		ng/L		92	47 - 162
Perfluoropentanoic acid (PFPeA)	40.0	38.8		ng/L		97	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	38.8		ng/L		97	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	40.3		ng/L		101	63 - 135

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-139078/2-A
Matrix: Water
Analysis Batch: 141271

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 139078

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorononanoic acid (PFNA)	40.0	39.2		ng/L		98	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	39.0		ng/L		97	66 - 141
Perfluoroundecanoic acid (PFUnA)	40.0	33.9		ng/L		85	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	37.8		ng/L		95	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	38.2		ng/L		95	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	46.7		ng/L		117	47 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	34.3		ng/L		86	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	36.0		ng/L		90	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	38.5		ng/L		109	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	33.8		ng/L		93	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	35.9		ng/L		94	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	34.2		ng/L		89	35 - 157
Perfluorooctane Sulfonamide (FOSA)	40.0	39.6		ng/L		99	59 - 163
6:2FTS	37.9	40.3		ng/L		106	60 - 140
8:2FTS	38.3	41.6		ng/L		108	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOS	*124*		*25 - 150*
13C4 PFOA	*127*		*25 - 150*
13C8 FOSA	*17*	*	*25 - 150*
13C4 PFBA	*124*		*25 - 150*
13C2 PFHxA	*123*		*25 - 150*
13C5 PFNA	*125*		*25 - 150*
13C2 PFDA	*121*		*25 - 150*
13C2 PFUnA	*114*		*25 - 150*
13C2 PFDoA	*113*		*25 - 150*
18O2 PFHxS	*122*		*25 - 150*
13C4-PFHpA	*138*		*25 - 150*
13C5-PFPeA	*126*		*25 - 150*
M2-6:2FTS	*133*		*25 - 150*
M2-8:2FTS	*119*		*25 - 150*

Lab Sample ID: LCSD 320-139078/3-A
Matrix: Water
Analysis Batch: 141271

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 139078

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	43.0		ng/L		107	74 - 138	3	30
Perfluorooctanoic acid (PFOA)	40.0	38.6		ng/L		97	63 - 141	3	30

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-139078/3-A
Matrix: Water
Analysis Batch: 141271

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 139078

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctane Sulfonate (PFOS)			37.1	36.0		ng/L		97	47 - 162	5	30
Perfluoropentanoic acid (PFPeA)			40.0	40.9		ng/L		102	69 - 134	5	30
Perfluorohexanoic acid (PFHxA)			40.0	40.6		ng/L		102	70 - 136	4	30
Perfluoroheptanoic acid (PFHpA)			40.0	40.7		ng/L		102	63 - 135	1	30
Perfluorononanoic acid (PFNA)			40.0	39.4		ng/L		98	71 - 140	0	30
Perfluorodecanoic acid (PFDA)			40.0	40.4		ng/L		101	66 - 141	4	30
Perfluoroundecanoic acid (PFUnA)			40.0	34.0		ng/L		85	68 - 139	0	30
Perfluorododecanoic acid (PFDoA)			40.0	38.0		ng/L		95	71 - 139	0	30
Perfluorotridecanoic Acid (PFTriA)			40.0	40.7		ng/L		102	51 - 139	6	30
Perfluorotetradecanoic acid (PFTeA)			40.0	49.5		ng/L		124	47 - 130	6	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	35.1		ng/L		88	50 - 150	2	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	37.9		ng/L		95	50 - 150	5	30
Perfluorobutanesulfonic acid (PFBS)			35.4	38.6		ng/L		109	55 - 147	0	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	34.6		ng/L		95	58 - 138	3	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	38.8		ng/L		102	32 - 170	8	30
Perfluorodecanesulfonic acid (PFDS)			38.6	36.3		ng/L		94	35 - 157	6	30
Perfluorooctane Sulfonamide (FOSA)			40.0	41.6		ng/L		104	59 - 163	5	30
6:2FTS			37.9	40.9		ng/L		108	60 - 140	1	30
8:2FTS			38.3	41.9		ng/L		109	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOS	*113*		*25 - 150*
13C4 PFOA	*119*		*25 - 150*
13C8 FOSA	*19*	*	*25 - 150*
13C4 PFBA	*119*		*25 - 150*
13C2 PFHxA	*117*		*25 - 150*
13C5 PFNA	*118*		*25 - 150*
13C2 PFDA	*113*		*25 - 150*
13C2 PFUnA	*109*		*25 - 150*
13C2 PFDoA	*108*		*25 - 150*
18O2 PFHxS	*116*		*25 - 150*
13C4-PFHpA	*132*		*25 - 150*
13C5-PFPeA	*117*		*25 - 150*
M2-6:2FTS	*127*		*25 - 150*
M2-8:2FTS	*106*		*25 - 150*

QC Association Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

LCMS

Prep Batch: 139078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23603-1	MW-1	Total/NA	Water	3535	
320-23603-2	MW-3	Total/NA	Water	3535	
320-23603-3	MW-3 DUP	Total/NA	Water	3535	
320-23603-4	MW-4	Total/NA	Water	3535	
320-23603-5	MW-5	Total/NA	Water	3535	
MB 320-139078/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-139078/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-139078/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 141271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23603-1	MW-1	Total/NA	Water	537 (modified)	139078
320-23603-2	MW-3	Total/NA	Water	537 (modified)	139078
320-23603-3	MW-3 DUP	Total/NA	Water	537 (modified)	139078
320-23603-4	MW-4	Total/NA	Water	537 (modified)	139078
320-23603-5	MW-5	Total/NA	Water	537 (modified)	139078
MB 320-139078/1-A	Method Blank	Total/NA	Water	537 (modified)	139078
LCS 320-139078/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	139078
LCSD 320-139078/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	139078

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Client Sample ID: MW-1
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252.2 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 00:33	SBC	TAL SAC

Client Sample ID: MW-3
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 00:40	SBC	TAL SAC

Client Sample ID: MW-3 DUP
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.7 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 00:48	SBC	TAL SAC

Client Sample ID: MW-4
Date Collected: 11/14/16 11:27
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			262.7 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 00:55	SBC	TAL SAC

Client Sample ID: MW-5
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23603-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.9 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 01:03	SBC	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Certification Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-17
Arizona	State Program	9	AZ0708	08-11-17
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-18
Colorado	State Program	8	CA00044	08-31-17
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	10-31-17
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-17
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-17
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-18
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	NELAP	9	01144CA	06-30-14 *
California	State Program	9	2927	04-30-17
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17
Illinois	NELAP	5	200004	07-31-17
Kansas	NELAP	7	E-10336	01-31-17 *
Kentucky (UST)	State Program	4	58	02-23-17
Kentucky (WW)	State Program	4	98016	12-31-16 *
Minnesota	NELAP	5	039-999-348	12-31-16 *
Minnesota (Petrofund)	State Program	1	3506	07-31-17
Nevada	State Program	9	OH-000482008A	07-31-17
New Jersey	NELAP	2	OH001	06-30-17
New York	NELAP	2	10975	03-31-17
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17

* Certification renewal pending - certification considered valid.

Certification Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Loud Drive PCE

TestAmerica Job ID: 320-23603-1

Laboratory: TestAmerica Canton (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
USDA	Federal		P330-13-00319	11-26-16 *
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-17
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

* Certification renewal pending - certification considered valid.

DEQ

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
	Loud Drive PCE	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000152	17	pincumbej		Jeff Pincumbe
Dept-Division-District	**Index**	**CC Email 2**	**Project Due Date**	**Sample Collector Phone**
DEQ-RRD-Saginwa-bay	44031	shireyb		517-335-6418
State Project Manager	**PCA**	**CC Email 3**		**Contract Firm**
Mike Jury	30740			
State Project Manager Email	**Project**	**Overflow Lab Choice 1**	**Accept Analysis hold time codes**	**Contract Firm Primary Contact**
jurym1	457179	TEST AMERICA		
State Project Manager Phone	**Phase**	**Overflow Lab Choice 2**		**Primary Contact Phone**
989-894-6255	00			

	Lab Use Only	Field Sample Identification	Collection Date	Collection Time	Container Count	Comments
1		MW-1	11-14-16			
2		MW-2	11-14-16			
3		MW-3 DUP	11-14-16			pl'c
4		MW-4	11-14-16			
5		MW-5	11-14-16			
6						
7						
8						
9						
10						

320-23603 Chain of Custody

ORGANIC CHEMISTRY

VOA - Volatile Organic Acidic	
Volatiles - Full List	1 2 3 4 5 6 7 8 9 10
BTEX/MTBE/TMB only	1 2 3 4 5 6 7 8 9 10
Chlorinated only	1 2 3 4 5 6 7 8 9 10
GRO	1 2 3 4 5 6 7 8 9 10
1,4 Dioxane	1 2 3 4 5 6 7 8 9 10
METH - Methane, Ethane, Ethene	
Methane, Ethane, Ethene	1 2 3 4 5 6 7 8 9 10
ON - Pesticides, PCBs	
Pesticides & PCBs	1 2 3 4 5 6 7 8 9 10
Pesticides only	1 2 3 4 5 6 7 8 9 10
PCBs only	1 2 3 4 5 6 7 8 9 10
Toxaphene	1 2 3 4 5 6 7 8 9 10
Chlordane	1 2 3 4 5 6 7 8 9 10
BNA - Base Neutral Acids	
BNAs	1 2 3 4 5 6 7 8 9 10
Benzidines	1 2 3 4 5 6 7 8 9 10
PNAs only	1 2 3 4 5 6 7 8 9 10
BNs only	1 2 3 4 5 6 7 8 9 10
Acids only	1 2 3 4 5 6 7 8 9 10
Organic Specialty Requests	
Library search - Volatiles	1 2 3 4 5 6 7 8 9 10
Library search - SemiVols	1 2 3 4 5 6 7 8 9 10
Finger Print	1 2 3 4 5 6 7 8 9 10
DRO / ORO	1 2 3 4 5 6 7 8 9 10

METALS CHEMISTRY PACKAGES

OpMemo2 - Total	1 2 3 4 5 6 7 8 9 10
OpMemo2 - Dissolved	1 2 3 4 5 6 7 8 9 10
(Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Tl,V,Zn)	
Michigan10 - Total	1 2 3 4 5 6 7 8 9 10
Michigan10 - Dissolved	1 2 3 4 5 6 7 8 9 10
(As,Ba,Cd,Cr,Cu,Pb,Hg,Se,Ag,Zn)	

MAD - DISSOLVED METALS

Diss - Silver - Ag	1 2 3 4 5 6 7 8 9 10
Diss - Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Diss - Arsenic - As	1 2 3 4 5 6 7 8 9 10
Diss - Boron - B	1 2 3 4 5 6 7 8 9 10
Diss - Barium - Ba	1 2 3 4 5 6 7 8 9 10
Diss - Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Diss - Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Diss - Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Diss - Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Diss - Copper - Cu	1 2 3 4 5 6 7 8 9 10
Diss - Iron - Fe	1 2 3 4 5 6 7 8 9 10
Diss - Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Diss - Lithium - Li	1 2 3 4 5 6 7 8 9 10
Diss - Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Diss - Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Diss - Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Diss - Lead - Pb	1 2 3 4 5 6 7 8 9 10
Diss - Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Diss - Selenium - Se	1 2 3 4 5 6 7 8 9 10
Diss - Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Diss - Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Diss - Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Diss - Uranium - U	1 2 3 4 5 6 7 8 9 10
Diss - Vanadium - V	1 2 3 4 5 6 7 8 9 10
Diss - Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Diss - Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Diss - Potassium - K	1 2 3 4 5 6 7 8 9 10
Diss - Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Diss - Sodium - Na	1 2 3 4 5 6 7 8 9 10
Diss - Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10

MD - Metals Dissolved

Lab Filtration	1 2 3 4 5 6 7 8 9 10

MA - TOTAL METALS

Silver - Ag	1 2 3 4 5 6 7 8 9 10
Aluminum - Al	1 2 3 4 5 6 7 8 9 10
Arsenic - As	1 2 3 4 5 6 7 8 9 10
Boron - B	1 2 3 4 5 6 7 8 9 10
Barium - Ba	1 2 3 4 5 6 7 8 9 10
Beryllium - Be	1 2 3 4 5 6 7 8 9 10
Cadmium - Cd	1 2 3 4 5 6 7 8 9 10
Cobalt - Co	1 2 3 4 5 6 7 8 9 10
Chromium - Cr	1 2 3 4 5 6 7 8 9 10
Copper - Cu	1 2 3 4 5 6 7 8 9 10
Iron - Fe	1 2 3 4 5 6 7 8 9 10
Mercury - Hg	1 2 3 4 5 6 7 8 9 10
Lithium - Li	1 2 3 4 5 6 7 8 9 10
Manganese - Mn	1 2 3 4 5 6 7 8 9 10
Molybdenum - Mo	1 2 3 4 5 6 7 8 9 10
Nickel - Ni	1 2 3 4 5 6 7 8 9 10
Lead - Pb	1 2 3 4 5 6 7 8 9 10
Antimony - Sb	1 2 3 4 5 6 7 8 9 10
Selenium - Se	1 2 3 4 5 6 7 8 9 10
Strontium - Sr	1 2 3 4 5 6 7 8 9 10
Titanium - Ti	1 2 3 4 5 6 7 8 9 10
Thallium - Tl	1 2 3 4 5 6 7 8 9 10
Uranium - U	1 2 3 4 5 6 7 8 9 10
Vanadium - V	1 2 3 4 5 6 7 8 9 10
Zinc - Zn	1 2 3 4 5 6 7 8 9 10
Calcium - Ca	1 2 3 4 5 6 7 8 9 10
Potassium - K	1 2 3 4 5 6 7 8 9 10
Magnesium - Mg	1 2 3 4 5 6 7 8 9 10
Sodium - Na	1 2 3 4 5 6 7 8 9 10
Hardness - Ca, Mg	1 2 3 4 5 6 7 8 9 10

LHG - Low Level Mercury

Mercury Low Level - Hg	1 2 3 4 5 6 7 8 9 10

GENERAL CHEMISTRY

GB Total Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GB Amenable Cyanide - CN	1 2 3 4 5 6 7 8 9 10
GCN Available Cyanide - CN	1 2 3 4 5 6 7 8 9 10
CA Chlorophyll	1 2 3 4 5 6 7 8 9 10
GN Ortho Phosphate - OP	1 2 3 4 5 6 7 8 9 10
GN Nitrite - NO_2	1 2 3 4 5 6 7 8 9 10
GN Nitrate - NO_3 (Calc.)	1 2 3 4 5 6 7 8 9 10
GN Suspended Solids - SS	1 2 3 4 5 6 7 8 9 10
GN Dissolved Solids - TDS	1 2 3 4 5 6 7 8 9 10
MN Diss Solids - TDS (Calc.)	1 2 3 4 5 6 7 8 9 10
GN Turbidity	1 2 3 4 5 6 7 8 9 10
MN Total Alkalinity	1 2 3 4 5 6 7 8 9 10
MN Bicarb/Carb Alkalinity (includes Total Alkalinity)	1 2 3 4 5 6 7 8 9 10
MN Chloride - Cl	1 2 3 4 5 6 7 8 9 10
MN Fluoride - F	1 2 3 4 5 6 7 8 9 10
MN Sulfate - SO4	1 2 3 4 5 6 7 8 9 10
MN Chromium 6 - Cr+6	1 2 3 4 5 6 7 8 9 10
MN Conductivity	1 2 3 4 5 6 7 8 9 10
MN pH	1 2 3 4 5 6 7 8 9 10
GA Chem Oxyg Dem - COD	1 2 3 4 5 6 7 8 9 10
GA Diss Org Carbon - DOC (FF) (Field - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GN Diss Org Carbon - DOC (LF) (Lab - Filtered & Preserved)	1 2 3 4 5 6 7 8 9 10
GA Total Org Carbon - TOC	1 2 3 4 5 6 7 8 9 10
GA Ammonia - NH3	1 2 3 4 5 6 7 8 9 10
GA Nitrate+Nitrite - NO3+NO2	1 2 3 4 5 6 7 8 9 10
GA Kjeldahl Nitrogen - KN	1 2 3 4 5 6 7 8 9 10
GA Total Phosphorus - TP	1 2 3 4 5 6 7 8 9 10

Chain of Custody

	Relinquished by	Received By	Date / Time
Print Name & Org:	Jeff Pincumbe - MDEQ		
Signature:			11/15/16 1400
Print Name & Org:		Kevin Mercier TAL	
Signature:			11/16/16 1120 KM
Print Name & Org:		TAL - MWS	
Signature:			11/17/16 0930

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

320-23603 Field Sheet

Job: 23603

Tracking #: 6209 0767 9052

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes:

IR(W-4 11:27

No other times on containers

CMP 11/17/16

Samples not frozen CMP 11/17/16

Therm. ID 11 / 12 / AK / Other

Cooler Custody Seal: TAS 960318

Sample Custody Seal: —

Temp: Observed 0.2°C

Corrected: -0.7°C

From: Temp Blank ☐ Sample ☑

NCM : Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑

Initial / Date: BLH 11/17/2016

~~TA Michigan kept and ran~~ 

Please log using project #24006344 per K. Brooks.


11/16/16

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

320-23603 Field Sheet

Job: 23603

Tracking #: 6209 0767 9052

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes:

MW-4 11:27

No other times on containers

CMK 11/17/16

Samples not frozen CMK 11/17/16

Therm. ID 11 / 12 / AK / Other

Cooler Custody Seal: TAS 960318

Sample Custody Seal: —

Temp: Observed 0.2°C

Corrected: -0.7°C

From: Temp Blank ☐ Sample ☑

NCM : Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☑
CoC is complete w/o discrepancies?	☑	☐	☐
Samples received within holding time?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑

Initial / Date: BLH 11/17/2016

~~TA Michigan kept and ran~~ 

Please log using project #24006344 per K. Brooks.

Login Sample Receipt Checklist

Client: Michigan Dept. of Environmental Quality

Job Number: 320-23603-1

Login Number: 23603

List Source: TestAmerica Sacramento

List Number: 1

Creator: Edman, Connor M

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	coc not relinquished
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	