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 18, 2017

SUBJECT: Wurtsmith – F-41 PFC Contamination/Colbath Road, Iosco County
Site ID #35000153
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 F-41/Colbath Road 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 Loud Drive 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 including the Colbath Road area.

The F-41/Colbath Road site is located on the west side of Van Etten Lake and north of the air force base. This is a residential area where all of the homes use private wells for their water supply. Ongoing environmental work associated with the air force base has determined that PFCs are migrating from the base towards, and have impacted, Van Etten Lake. The northern extent of PFCs (towards Colbath Road) has not been defined. The purpose for the investigation in the Colbath Road area was to determine if PFCs detected in residential wells could be linked to the air force base or if they are the result of local use of PFC contained in firefighting foam.

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

This report includes the following:

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

Beginning on October 21, 2016, RRD's Geological Services Unit (GSU) completed two soil borings (B-1 and MW-4) and installed monitor wells MW-1, MW-2, MW-3, and MW-5 at the locations shown on Figure 2. The GPS coordinates for each location is included on Table 1. Soil boring logs and monitor well logs are included in Appendix A. GSU personnel completed the soil boring and monitor wells using a Geoprobe. Staff collected soil samples at each location using a dual tube system with a 3.25-inch outer rod. With the exception of MW-4, soil samples were collected from the surface until groundwater was encountered. At MW-4, refusal was encountered at a depth of 11 feet at four separate locations in the area of this boring. GSU did not install a monitor well at MW-4. The soil samples were for determining lithology. There were no soil samples submitted to a laboratory for analyses.

At MW-1, MW-2, MW-3, and MW-5, an attempt was made to drive the 3.25-inch rods with a solid point as deep as possible in an attempt to identify an underlying confining layer. The total depth at each location is included on the boring logs. When total depth was reached, the GSU crew 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. Based on the gamma logs, a confining layer was not encountered at any of the boring locations.

The GSU completed vertical aquifer sampling (VAS) at MW-1, MW-2, MW-3, MW-4, and MW-5. This was achieved by driving 1.25-inch Geoprobe rods with a mill slotted lead. Staff collected groundwater samples from the depth shown on the boring logs using a peristaltic pump. The samples were submitted to the DEQ Laboratory and analyzed for VOCs using USEPA Method 8260 (Table 3) (Appendix B). Duplicate groundwater samples were submitted to Test America and analyzed for PFCs (Table 4) (Appendix C).

During VAS, staff noted if the groundwater being pumped was becoming siltier with depth. There was a significant increase in the amount of silt being pumped with the groundwater at MW-2 (42-47 feet) and MW-4 (46-51 feet). The high amount of silt at MW-5 (32-37 feet) prevented a groundwater sample from being collected.

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 (Table 2). The December 7, 2016, groundwater elevation data was used to generate a Groundwater Contour Map (Fig 3). Based on Figure 3, the groundwater flow direction for the Colbath Road area is to the northeast towards Van Etten Lake.

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

A review of the groundwater analytical results indicated that Toluene was the only VOC detected in the groundwater at the site. The concentrations of Toluene were very low (<2.0 µg/l) in four of the groundwater samples collected from the site. These were from MW-2 (22-27 feet), MW-2 (42-47 feet), MW-3 (12-17 feet) and MW-4 (26-31 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 Colbath Road area. However, all of the concentrations were below the action level of 70 ng/l. The highest PFC concentration (31 ng/l) was detected in the monitor well sample from MW-2.

In summary, the groundwater flow direction for the site is to the northeast towards Van Etten Lake. Site lithology consists of sand with finer grained material at a depth of approximately 42 feet at MW-2, 46 feet at MW-4, and 32 feet at MW-5. 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 Colbath Road 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

F41 / Colbath Road

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

Loud Drive

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

River Road

DEQ-RR-MW4
DEQ-RR-MW1
DEQ-RR-B3
DEQ-RR-MW2
DEQ-RR-MW5
DEQ-RR-MW3

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

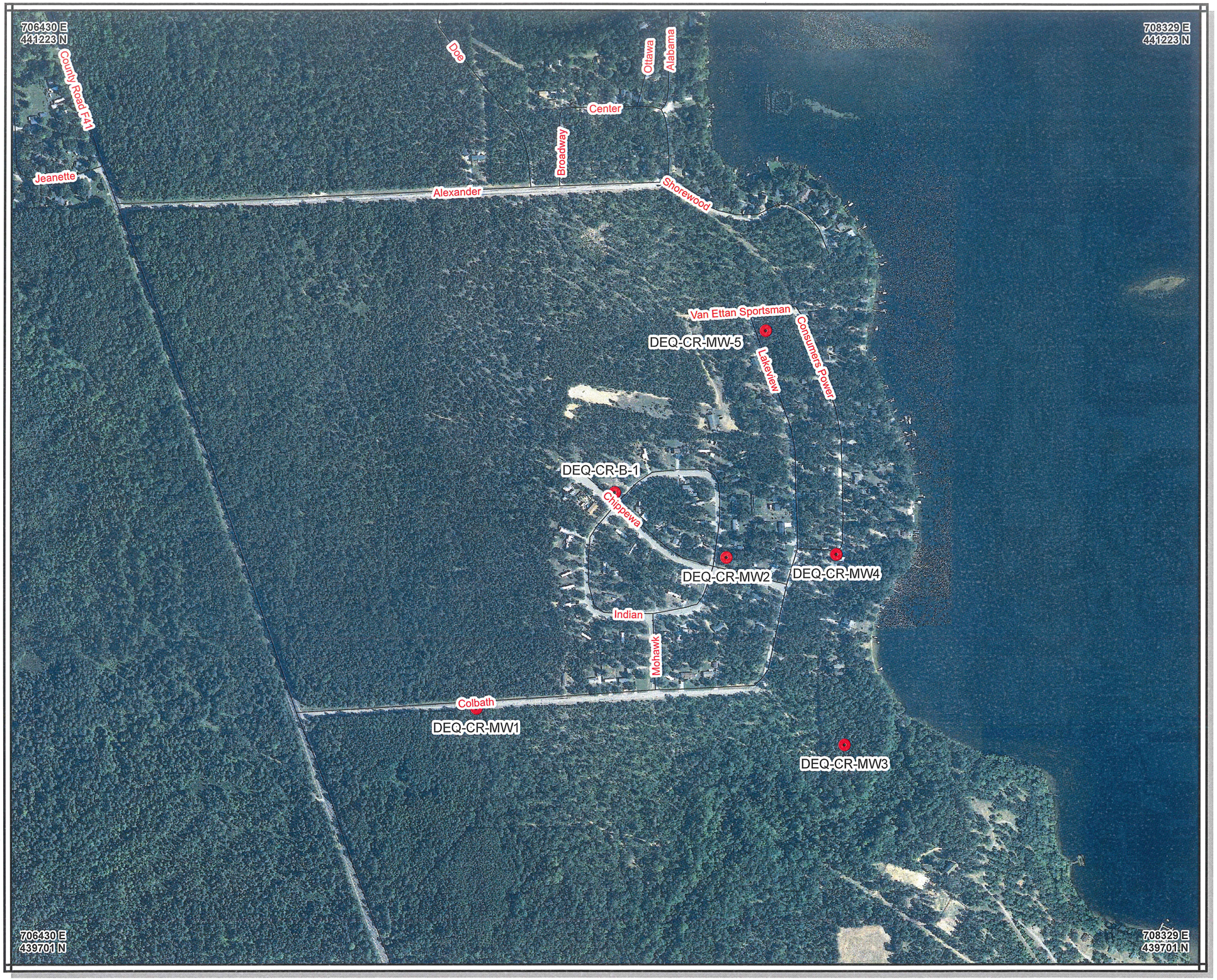
Wurtsmith Air Force Base

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		FIGURE 1



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: 2010
AERIAL RESOLUTION: 1 foot Natural Color

N
W E
S

0 30 60 120 Meters

0 130 260 520 Feet

1 inch = 500 feet

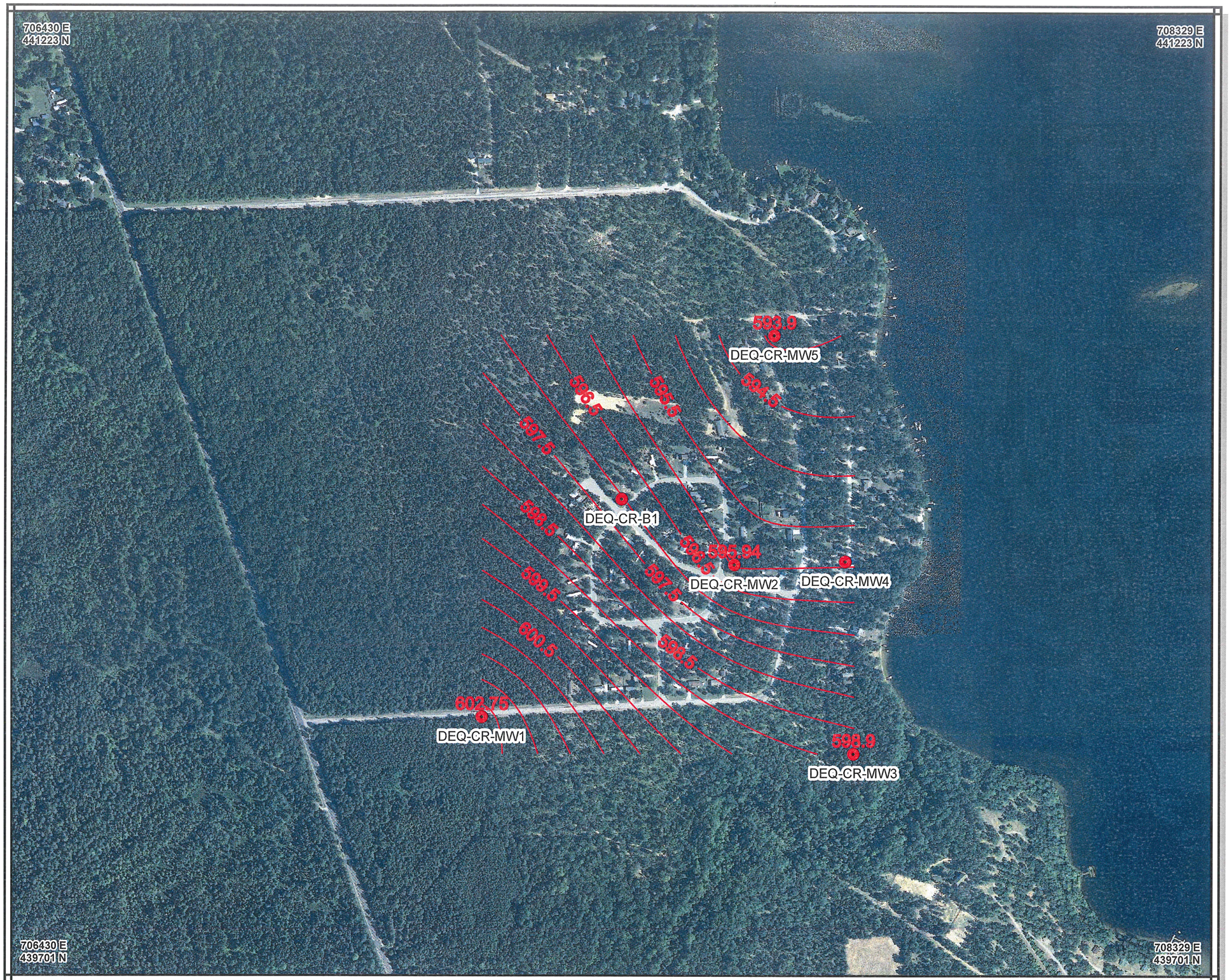
Wurtsmith - F41 / Colbath Road

ERNIE ID 35000153

OSCODA TOWNSHIP, IOSCO COUNTY
T24NS R9E SECTIONS 7 & 18

SITE MAP

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



LEGEND

- Soil Boring / Monitor Well
- Groundwater Contour 12-7-2016

- 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 30 60 120 Meters

0 130 260 520 Feet

1 inch = 500 feet

Wurtsmith - F41 / Colbath Road

ERNIE ID 35000153

OSCODA TOWNSHIP, IOSCO COUNTY
T24NS R9E SECTIONS 7 & 18

GROUNDWATER CONTOUR MAP 12-7-2016

GEOLOGIST		CREATION DATE
Jeff Pincumbe Geological Services Unit		December 2016
Remediation and Redevelopment Division	DEQ	FIGURE 3

GPS Data

F-41 PFC Contamination/Colbath Road,
Iosco County

LOCATION	LATITUDE	LONGITUDE	NORTHING	EASTING
DEQ-CR-B1	44.485791	-83.389698	440453.13	707396.084
DEQ-CR-MW1	44.482758	-83.392612	440108.925	707175.129
DEQ-CR-MW2	44.48481	-83.387499	440349.758	707574.386
DEQ-CR-MW3	44.48207	-83.385248	440051.178	707763.063
DEQ-CR-MW4	44.484807	-83.385295	440355.014	707749.626
DEQ-CR-MW5	44.488051	-83.386576	440712.025	707636.289

Elevation Data

F-41 PFC Contamination/Colbath Road,
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
CB-MW-1	617.62	614.90	20.30	17.58	14.79	602.83	14.87	602.75
CB-MW-2	613.34	613.47	24.85	24.98	17.16	596.18	17.40	595.94
CB-MW-3	610.25	610.28	19.15	19.18	11.28	598.97	11.35	598.90
CB-MW-4	NA	606.45	NA					
CB-MW-5	613.04	613.47	23.90	24.33	18.85	594.19	19.14	593.90
CB-B-1	NA	613.94	NA					

Michigan Department of Environmental Quality Analytical Testing Report

Work Orders: 1610158 1610240 1611130
Report Dates: 11/23/16 12/2/2016 12/6/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: COLBATH PFC CONTAMINATION, IOSCO CO.
Project Number: 35000153

Sample Number								1610158-01	1610158-02	1610158-03	1610158-04	1610158-05	1610240-10	1610240-11
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	MW-1	MW-1	MW-1	MW-2	MW-2 Dup
Sample Depth								12-17 feet	22-27 feet	32-37 feet	42-47 feet	52-57 feet	22-27 feet	22-27 feet
Date Collected								10/21/2016	10/21/2016	10/21/2016	10/21/2016	10/21/2016	10/25/2016	10/25/2016
Date Received								10/21/2016	10/21/2016	10/21/2016	10/21/2016	10/21/2016	10/28/2016	10/28/2016
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
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<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
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<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
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<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
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<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	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<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
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<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
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<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
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<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	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<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	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5	<5	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5	<5	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5	<5	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<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	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<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	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5	<5	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5	<5	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1	<1	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5	<5	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5	<5	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1	<1	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5	<5	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<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	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<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	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	<1	<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	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<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: 1610158 1610240 1611130
Report Dates: 11/23/16 12/2/2016 12/6/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: COLBATH PFC CONTAMINATION, IOSCO CO.
Project Number: 35000153

Sample Number								1610240-12	1610240-13	1610240-01	1610240-02	1610240-03	1610240-04	1610240-05
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-2	MW-2	MW-3	MW-3	MW-3	MW-3	MW-4
Sample Depth								32-37 feet	42-47 feet	12-17 feet	22-27 feet	32-37 feet	42-47 feet	16-21 feet
Date Collected								10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016	10/24/2016	10/24/2016
Date Received								10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016	10/28/2016
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
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<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
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<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
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<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
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<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	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<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
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<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
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<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
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<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	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<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	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5	<5	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5	<5	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5	<5	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<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	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<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	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5	<5	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5	<5	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1	<1	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5	<5	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5	<5	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1	<1	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5	<5	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<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	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<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	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	**1.3**	**1.2**	**1.6**	<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	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<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.

Sample Number								1610240-06	1610240-07	1610240-08	1610240-09	1611130-01	1611130-02	1611130-03
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-4	MW-4	MW-4	MW-5	MW-1	MW-1 Dup	MW-2
Sample Depth								26-31 feet	36-41 feet	46-51 feet	22-27 feet			
Date Collected								10/24/2016	10/24/2016	10/24/2016	10/25/2016	11/14/2016	11/14/2016	11/14/2016
Date Received								10/28/2016	10/28/2016	10/28/2016	10/28/2016	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
1,1,1-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<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
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<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
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<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
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<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	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<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
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<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
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<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
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<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	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5	<5	<5	<5	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<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	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5	<5	<5	<5	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5	<5	<5	<5	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5	<5	<5	<5	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<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	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<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	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5	<5	<5	<5	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5	<5	<5	<5	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5	<5	<5	<5	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1	<1	<1	<1	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5	<5	<5	<5	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5	<5	<5	<5	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1	<1	<1	<1	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2	<2	<2	<2	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1	<1	<1	<1	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5	<5	<5	<5	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1	<1	<1	<1	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1	<1	<1	<1	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1	<1	<1	<1	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<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	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5	<5	<5	<5	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<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	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	1.7	<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	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<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	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1	<1	<1	<1	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<1	<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: 1610158 1610240 1611130
Report Dates: 11/23/16 12/2/2016 12/6/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: COLBATH PFC CONTAMINATION, IOSCO CO.
Project Number: 35000153

Sample Number								1611130-04	1611130-05
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-5
Sample Depth									
Date Collected								11/14/2016	11/14/2016
Date Received								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-Trichloroethane	ug/L	8260	1	200	89	660,000	1,600	<1	<1
1,1,2,2-Tetrachloroethane	ug/L	8260	1	9	78	12,000	1,800	<1	<1
1,1,2-Trichloroethane	ug/L	8260	1	5	330	17,000	6,400	<1	<1
1,1-Dichloroethane	ug/L	8260	1	880	740	1,000,000	13,000	<1	<1
1,1-Dichloroethylene	ug/L	8260	1	7	130	200	2,300	<1	<1
1,2,3-Trichlorobenzene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5
1,2,3-Trichloropropane	ug/L	8260	1	42	NA	8,300	NA	<1	<1
1,2,3-Trimethylbenzene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1
1,2,4-Trichlorobenzene	ug/L	8260	5	70	99	300,000	850	<5	<5
1,2,4-Trimethylbenzene	ug/L	8260	1	63	17	56,000	310	<1	<1
1,2-Dibromo-3-chloropropane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5
1,2-Dibromoethane	ug/L	8260	0	0	6	2,400	280	<1	<1
1,2-Dichlorobenzene	ug/L	8260	1	600	13	160,000	240	<1	<1
1,2-Dichloroethane	ug/L	8260	1	5	360	9,600	16,000	<1	<1
1,2-Dichloropropane	ug/L	8260	1	5	230	16,000	4,000	<1	<1
1,3,5-Trimethylbenzene	ug/L	8260	1	72	45	61,000	810	<1	<1
1,3-Dichlorobenzene	ug/L	8260	1	7	28	18,000	200	<1	<1
1,4-Dichlorobenzene	ug/L	8260	1	75	17	16,000	210	<1	<1
2-Butanone (MEK)	ug/L	8260	25	13,000	2,200	240,000,000	40,000	<5	<5
2-Hexanone	ug/L	8260	50	1,000	ID	4,200,000	ID	<5	<5
2-Methylnaphthalene	ug/L	8260	5	260	19	25,000	340	<5	<5
2-Propanone (acetone)	ug/L	8260	50	730	1,700	1,000,000,000	30,000	<20	<20
4-Methyl-2-pentanone (MIBK)	ug/L	8260	50	1,800	ID	20,000,000	ID	<5	<5
Acrylonitrile	ug/L	8260	2	3	2	34,000	1,200	<5	<5
Benzene	ug/L	8260	1	5	200	5,600	1,900	<1	<1
Bromobenzene	ug/L	8260	1	18	NA	180,000	NA	<1	<1
Bromochloromethane	ug/L	8260	NA	NA	NA	NA	NA	<1	<1
Bromodichloromethane	ug/L	8260	1	80	ID	4,800	ID	<1	<1
Bromoform	ug/L	8260	1	80	ID	470,000	ID	<1	<1
Bromomethane	ug/L	8260	5	10	35	4,000	640	<5	<5
Carbon disulfide	ug/L	8260	5	800	ID	250,000	ID	<1	<1
Carbon tetrachloride	ug/L	8260	1	5	45	370	1,400	<1	<1
Chlorobenzene	ug/L	8260	1	100	25	210,000	450	<1	<1
Chloroethane	ug/L	8260	5	430	1,100	5,700,000	20,000	<5	<5
Chloroform	ug/L	8260	1	80	350	28,000	11,000	<1	<1
Chloromethane	ug/L	8260	5	260	ID	8,600	ID	<5	<5
cis-1,2-Dichloroethylene	ug/L	8260	1	70	620	93,000	11,000	<1	<1
cis-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1
Cyclohexane	ug/L	8260	NA	NA	NA	NA	NA	<5	<5
Dibromochloromethane	ug/L	8260	5	80	ID	14,000	ID	<1	<1
Dibromomethane	ug/L	8260	5	80	NA	ID	NA	<1	<1
Dichlorodifluoromethane	ug/L	8260	5	1,700	ID	220,000	ID	<5	<5
Diethyl ether	ug/L	8260	10	10	ID	61,000,000	ID	<5	<5
Diisopropyl Ether	ug/L	8260	5	30	ID	8,000	ID	<5	<5
Ethylbenzene	ug/L	8260	1	74	18	110,000	320	<1	<1
Ethyltertiarybutylether	ug/L	8260	5	49	ID	2,900,000	ID	<5	<5
Hexachloroethane	ug/L	8260	5	7	7	27,000	210	<5	<5
Isopropylbenzene	ug/L	8260	5	800	28	56,000	500	<1	<1
m & p - Xylene	ug/L	8260	NA	NA	NA	NA	NA	<2	<2
Methyl iodide	ug/L	8260	NA	NA	NA	NA	NA	<1	<1
Methylene chloride	ug/L	8260	5	5	1,500	220,000	17,000	<5	<5
Methyltertiarybutylether	ug/L	8260	5	40	7,100	47,000,000	420,000	<1	<1
Naphthalene	ug/L	8260	5	520	11	31,000	200	<5	<5
n-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1
n-Propylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1
o-Xylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1
p-Isopropyl toluene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1
sec-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1
Styrene	ug/L	8260	1	100	80	170,000	2,900	<1	<1
tert-Butylbenzene	ug/L	8260	1	80	ID	ID	ID	<1	<1
tertiary Butyl Alcohol	ug/L	8260	50	3,900	NA	1,000,000,000	NA	<50	<50
tertiaryAmylmethylether	ug/L	8260	5	190	NA	260,000	NA	<5	<5
Tetrachloroethylene	ug/L	8260	1	5	60	25,000	2,900	<1	<1
Tetrahydrofuran	ug/L	8260	90	95	11,000	6,900,000	150,000	<5	<5
Toluene	ug/L	8260	1	790	270	530,000	2,600	<1	<1
trans-1,2-Dichloroethylene	ug/L	8260	1	100	1,500	85,000	28,000	<1	<1
trans-1,3-Dichloropropylene	ug/L	8260	NA	NA	NA	NA	NA	<1	<1
trans-1,4-Dichloro-2-butene	ug/L	8260	NA	NA	NA	NA	NA	<5	<5
Trichloroethylene	ug/L	8260	1	5	200	2,200	3,500	<1	<1
Trichlorofluoromethane	ug/L	8260	1	2,600	NA	1,100,000	NA	<1	<1
Vinyl chloride	ug/L	8260	1	2	13	1,100	17,000	<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

Table #4
(Page 1 of 1)

Test America Job IDs 320-23105-1 320-23158-1 320-23601-1
Report Date: 11/8/2016 11/11/2016 12/15/2016
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: F-41/COLBATH ROAD PFC CONTAM., IOSCO CO.
Project Number: 35000152

Location		MW-1	MW-1	MW-1	MW-1	MW-1	MW-2	MW-2	MW-2
Depth		12-17 feet	22-27 feet	32-37 feet	42-47 feet	52-57 feet	22-27 feet	22-27 Dup	32-37 feet
Date		10/21/2016	10/21/2016	10/21/2016	10/21/2016	10/21/2016	10/25/2016	10/25/2016	10/25/2016
	Action Level								
Perfluorooctanoic Acid (PFOA)	70 ng/l	<2	<2	**1.9**	**0.82**	<.73	**8**	**7.3**	**3.5**
Perfluorooctane Sulfonate (PFOS)	70ng/l	<2	<2	<1.2	<1.3	<1.2	**9**	**9**	**3.8**
Total PFOA and PFOS	70 ng/l	ND	ND	**1.9**	**0.82**	ND	**17**	**16.3**	**7.3**

Location		MW-2	MW-3	MW-3	MW-3	MW-3	MW-4	MW-4	MW-4
Depth		42-47 feet	12-17 feet	22-27 feet	32-37 feet	42-47 feet	16-21 feet	26-31 feet	36-41 feet
Date		10/25/2016	10/25/2016	10/24/2016	10/24/2016	10/24/2016	10/24/2016	10/24/2016	10/24/2016
	Action Level								
Perfluorooctanoic Acid (PFOA)	70 ng/l	**4.3**	**1.4**	**1**	**1**	**1**	**3.7**	**5.1**	**7.2**
Perfluorooctane Sulfonate (PFOS)	70ng/l	**3.1**	<1.2	<1.3	<1.3	<1.2	**17**	**20**	**7.6**
Total PFOA and PFOS	70 ng/l	**7.4**	**1.4**	**1**	**1**	**1**	**20.7**	**25.1**	**14.8**

Location		MW-4	MW-5	MW-1	MW-1 Dup	MW-2	MW-3	MW-5
Depth		46-51 feet	22-27 feet					
Date		10/24/2016	10/25/2016	11/14/2016	11/14/2016	11/14/2016	11/14/2016	11/14/2016
	Action Level							
Perfluorooctanoic Acid (PFOA)	70 ng/l	**2.3**	<1.9	<0.72	**1.1**	**13**	<0.71	<0.69
Perfluorooctane Sulfonate (PFOS)	70ng/l	**2.8**	<1.9	<1.2	**5.1**	**18**	<1.2	<1.2
Total PFOA and PFOS	70 ng/l	**5.1**	ND	ND	**6.2**	**31**	ND	ND

ND = Not Detected

APPENDIX A

F-41 PFC Contamination/Colbath Road Drive, Iosco County
Site ID #53000154

DEQ Soil Boring Logs and Monitor Well Logs

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

BORING/WELL: CR-B-1

SITE: Wurtsmith - Colbath Road

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 7
LOCATION DESCRIPTION: Northwest corner of Chippewa and West Indian Drives

LOGGING DATE: 10-25-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 20 feet
ERNIE#: 35000153

WELL CONSTRUCTION	LITHOLOGIC LOG	DESCRIPTION	DEPTH	Gamma Log (cps)
		Grd.	0	No Gamma Log for this boring
		SAND Fine to medium, dark brown		
		SAND Fine to medium, light brown	5	
		No groundwater samples collected from this boring	10	
			15	
		Log TD	20	
			25	
			30	
			35	
			40	
			45	
			50	
			55	
			60	

Gamma Log cps: 10 20 30 40 50 60 70 80 90 100

VERTICAL DATUM: USGS
GRD. ELEVATION: 613.938
T.O.C.: NA
S.W.L.: NA
CASING: NA
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.485791
LONGITUDE: -83.389698
DATUM: MichGeoRef
NORTHING: 440453.130
EASTING: 707396.084

DEQ Remediation and Redevelopment Division

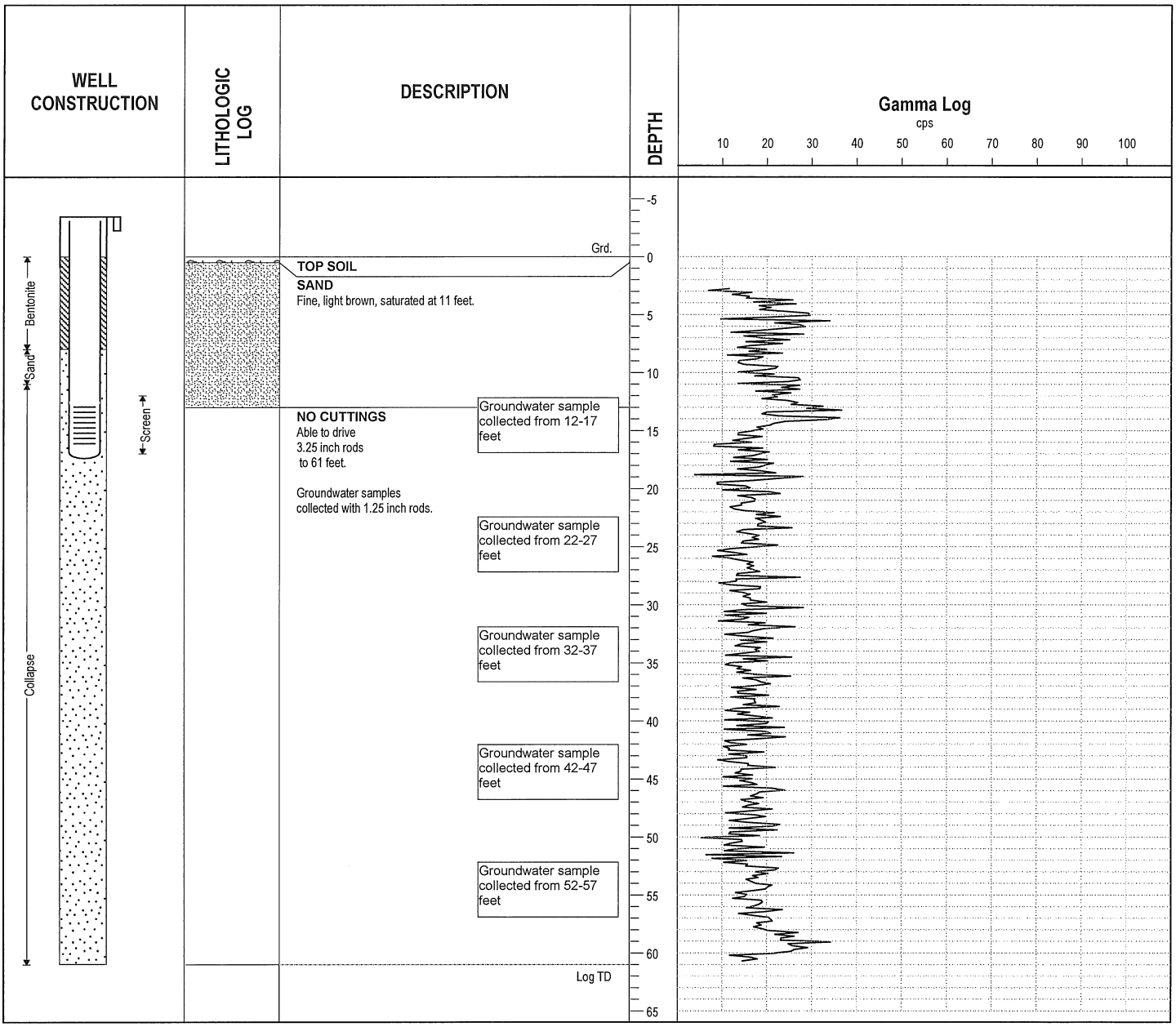
GEOPHYSICAL LOG

BORING/WELL: CR-MW-1

SITE: Wurtsmith - Colbath Road

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 18
LOCATION DESCRIPTION: South side of Colbath Road 900 feet east of F-41

LOGGING DATE: 10-21-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 17.5 feet
ERNIE#: 35000153



VERTICAL DATUM: USGS
GRD. ELEVATION: 614.90
T.O.C.: 617.62
S.W.L.: 12 feet
CASING: 2-inch I.D. pvc
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Collapse to 11 feet, sand to 8 feet, bentonite to surface

LATITUDE: 44.482758
LONGITUDE: -83.392612
DATUM: MichGeoRef
NORTHING: 440108.925
EASTING: 707175.129

DEQ Remediation and Redevelopment Division

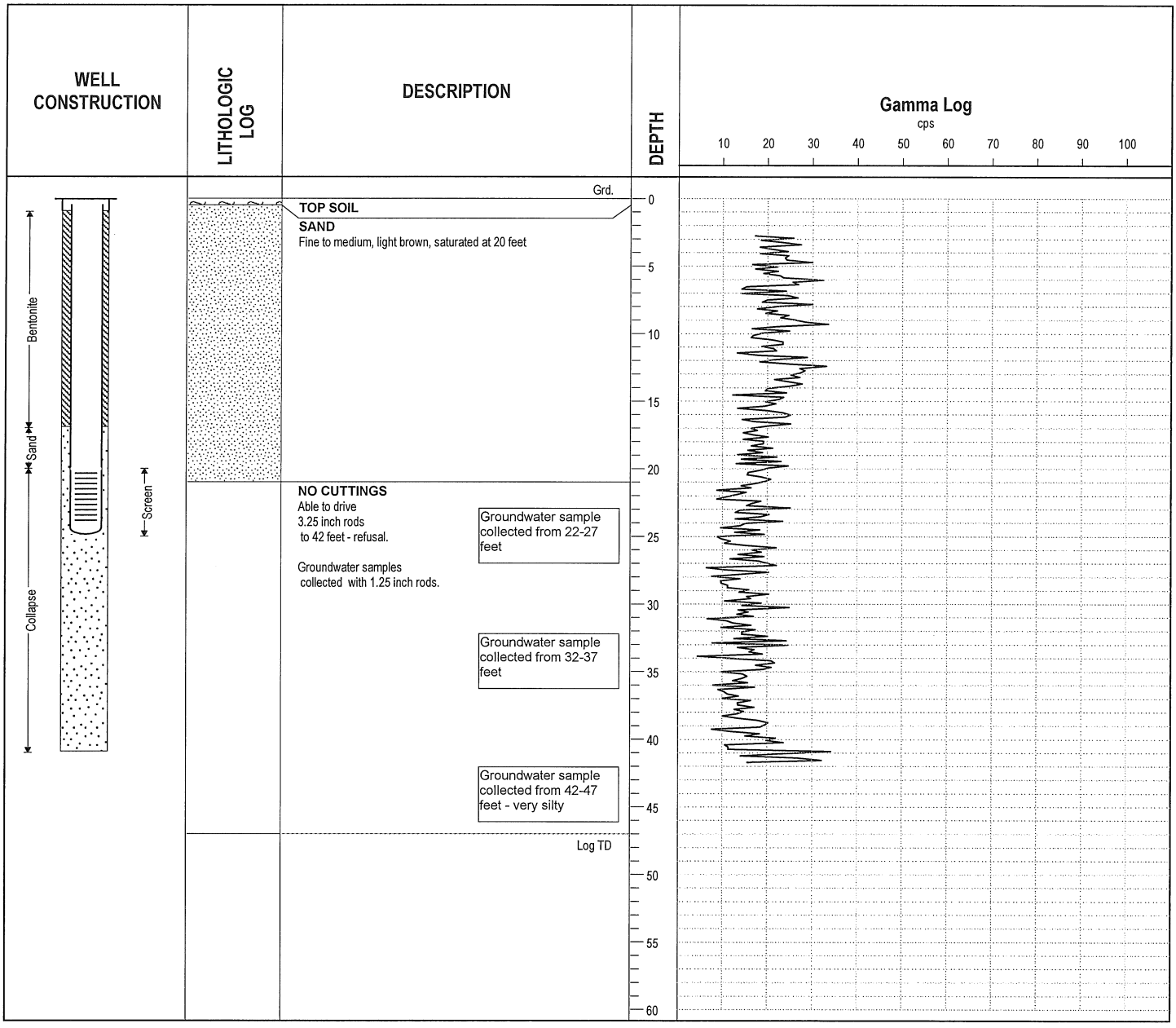
GEOPHYSICAL LOG

BORING/WELL: CR-MW-2

SITE: Wurtsmith - Colbath Road

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 7
LOCATION DESCRIPTION: Northeast corner of Chippewa and East Indian Drives

LOGGING DATE: 10-25-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 25 feet
ERNIE#: 35000153



VERTICAL DATUM: USGS
GRD. ELEVATION: 613.469
T.O.C.: 613.339
S.W.L.: 17 feet
CASING: 2-inch I.D. pvc
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Collapse to 20 feet, sand to 17 feet, bentonite to 1 foot

LATITUDE: 44.48481
LONGITUDE: -83.387499
DATUM: MichGeoRef
NORTHING: 440349.758
EASTING: 707574.386

DEQ Remediation and Redevelopment Division

GEOPHYSICAL LOG

BORING/WELL: CR-MW-3

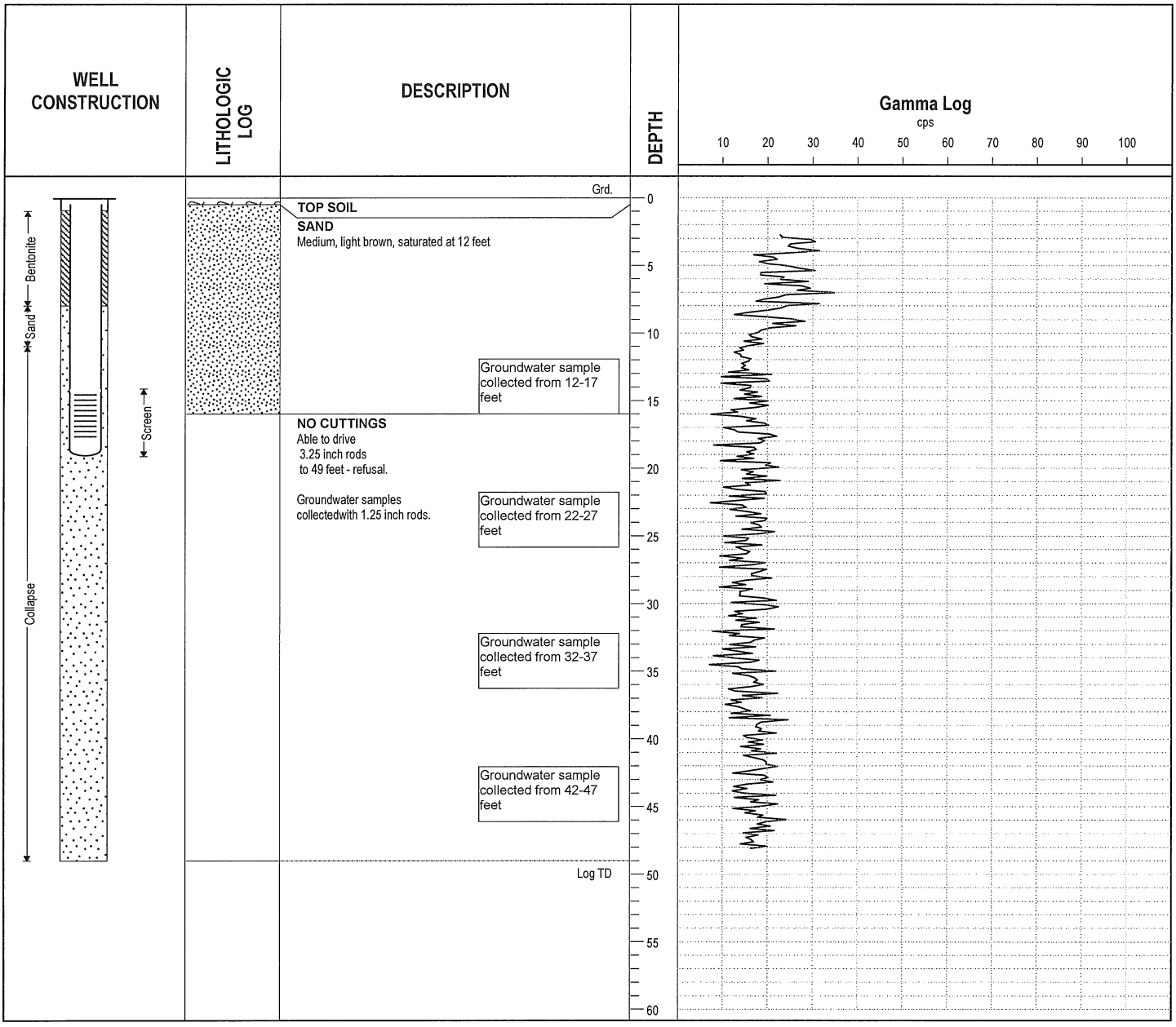
SITE: Wurtsmith - Colbath Road

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 18

LOGGING DATE: 10-24-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 17 feet

LOCATION DESCRIPTION: Southeast of the curve on Colbath Road on Y-Camp property

ERNIE#: 35000153



VERTICAL DATUM: USGS
GRD. ELEVATION: 610.283
T.O.C.: 610.254
S.W.L.: 11 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: 44.48207
LONGITUDE: -83.385248
DATUM: MichGeoRef
NORTHING: 440051.178
EASTING: 707763.063

DEQ Remediation and Redevelopment Division

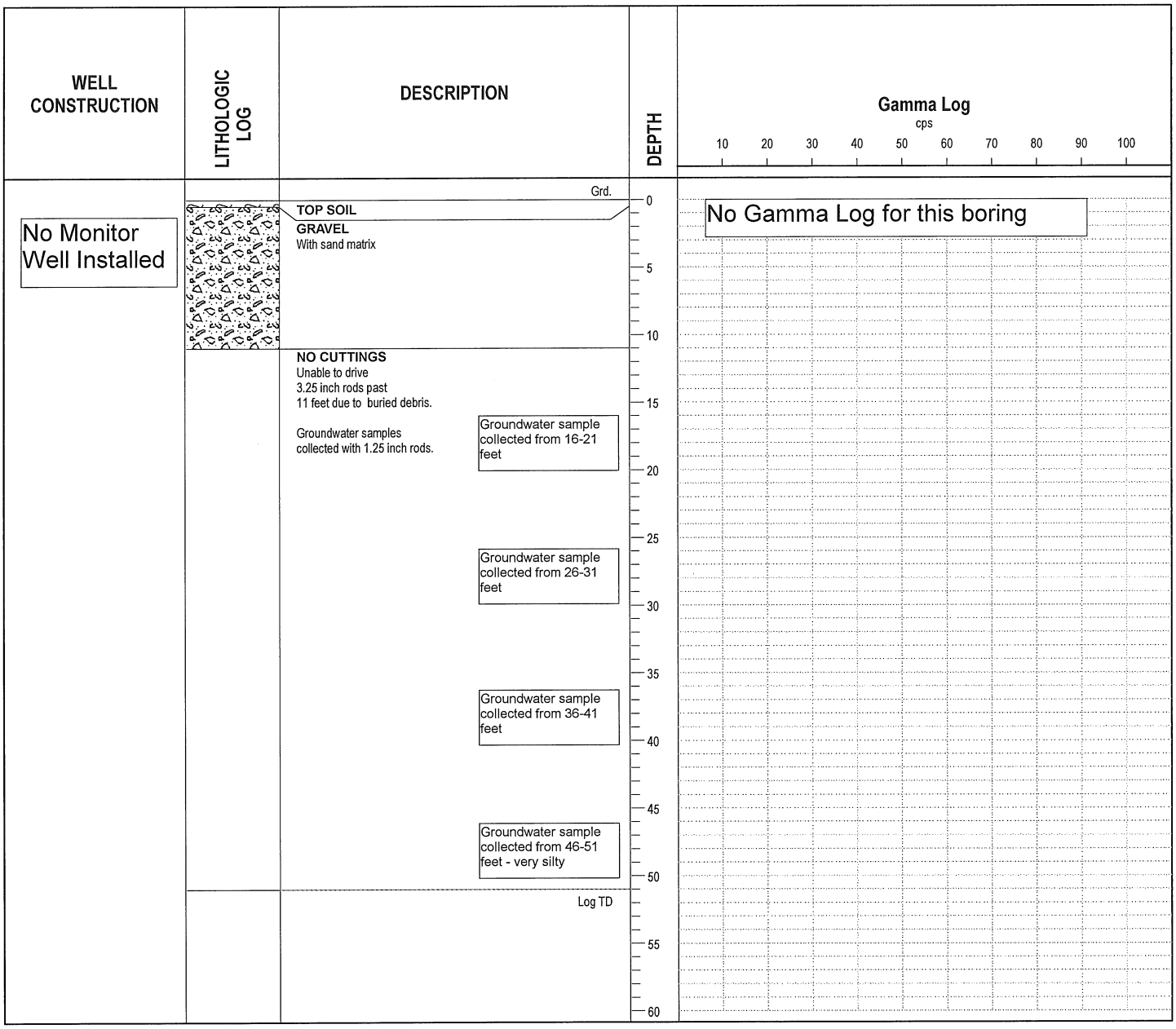
GEOPHYSICAL LOG

BORING/WELL: CR-MW-4

SITE: Wurtsmith - Colbath Road

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 7
LOCATION DESCRIPTION: South end of Lakeview Drive

LOGGING DATE: 10-24-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 51 feet
ERNIE#: 35000153



VERTICAL DATUM: USGS
GRD. ELEVATION: 606.45
T.O.C.: NA
S.W.L.: NA
CASING: 2-inch I.D. pvc
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Backfilled with bentonite

LATITUDE: 44.484807
LONGITUDE: -83.385295
DATUM: MichGeoRef
NORTHING: 440355.014
EASTING: 707749.626

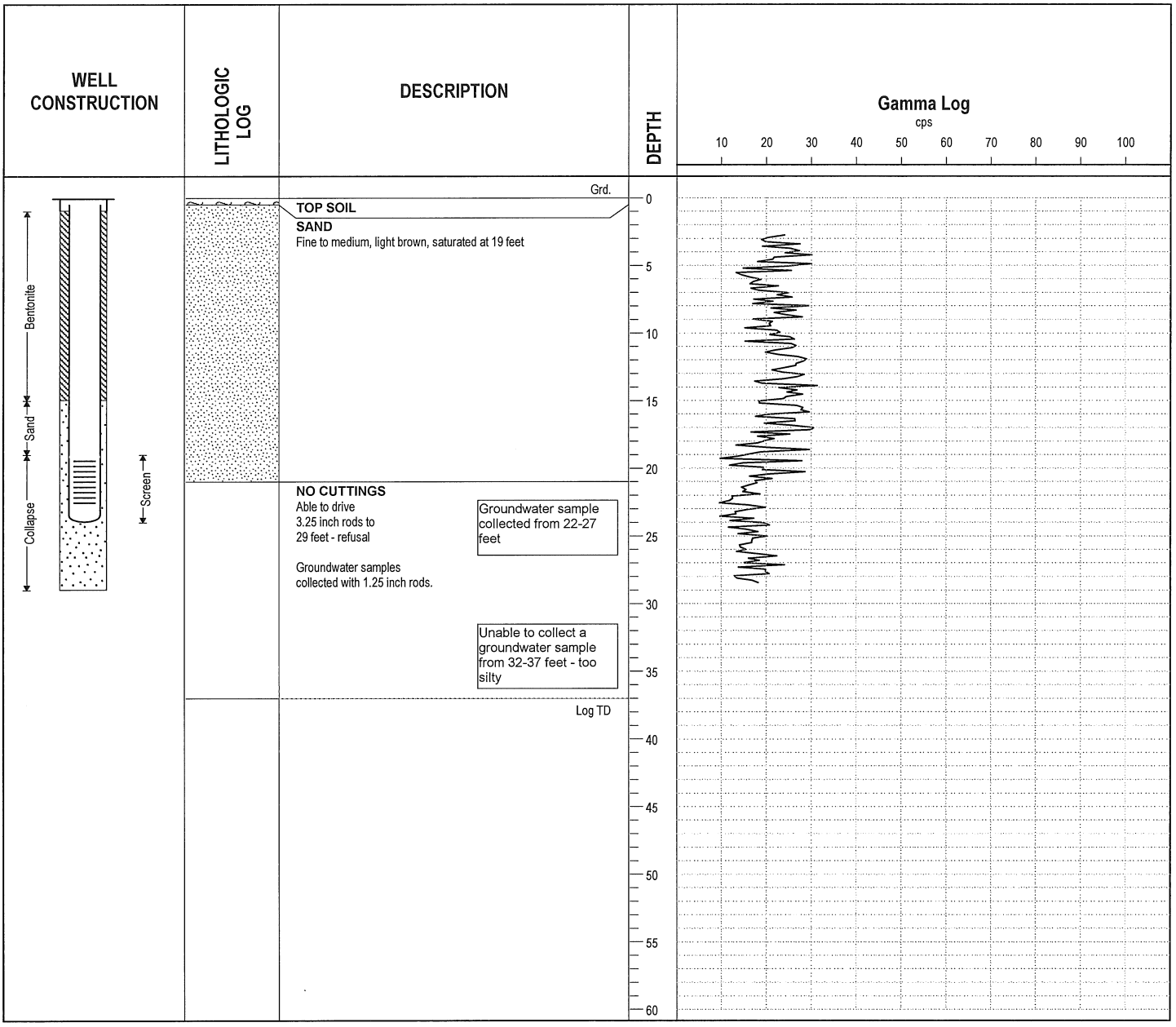
BORING/WELL: CR-MW-5

SITE: Wurtsmith - Colbath Road

GEOPHYSICAL LOG

COUNTY: Iosco
TOWNSHIP: Oscoda
TOWN: T24N
RANGE: R9E
SECTION: 7
LOCATION DESCRIPTION: North end of Colbath Road on east side

LOGGING DATE: 10-25-16
DRILLER: Zack Nichols
GAMMA LOGGED BY: Jeff Pincumbe
DRILL METHOD: Geoprobe
WELL DEPTH: 24 feet
ERNIE#: 35000153



VERTICAL DATUM: USGS
GRD. ELEVATION: 613.47
T.O.C.: 613.04
S.W.L.: 19 feet
CASING: 2-inch I.D. pvc
PROBE MODEL: Gamma
SERIAL NUMBER:
COMPLETION NOTES: Collapse to 19 feet, sand to 15 feet, bentonite to 1 foot

LATITUDE: 44.488051
LONGITUDE: -83.386576
DATUM: MichGeoRef
NORTHING: 440712.025
EASTING: 707636.289

APPENDIX B

F-41 PFC Contamination/Colbath Road Drive, Iosco County
Site ID #53000154

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

23 November 2016

Work Order: 1610158

Price: $575.00

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

RE: COLBATH PFC CONTAMINATION

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: COLBATH PFC CONTAMINATION
Site Code: 35000153
Project Manager: Mike Jury

Reported:
11/23/2016

Analytical Report for Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Qualifier
MW-1 12-17	1610158-01	Water	10/21/2016	10/21/2016	
MW-1 22-27	1610158-02	Water	10/21/2016	10/21/2016	
MW-1 32-37	1610158-03	Water	10/21/2016	10/21/2016	
MW-1 42-47	1610158-04	Water	10/21/2016	10/21/2016	
MW-1 52-57	1610158-05	Water	10/21/2016	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.
A11	Result is estimated due to high initial verification standard criteria failure.
A09	Result is estimated due to high recovery of batch quality control.
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 12-17

Lab ID: 1610158-01

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	10/28/16	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 12-17

Lab ID: 1610158-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/28/16	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			*100 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*10/28/16*	B6J2801	*8260*	

Lab Work Order # 1610158

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 22-27

Lab ID: 1610158-02

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	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 22-27

Lab ID: 1610158-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	10/28/16	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			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*103 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*102 %*	*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 32-37

Lab ID: 1610158-03

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 32-37

Lab ID: 1610158-03

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	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			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*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
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TEL: (517) 335-9800
FAX: (517) 335-9600

Client ID: MW-1 42-47

Lab ID: 1610158-04

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	

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

Client ID: MW-1 42-47

Lab ID: 1610158-04

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	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			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*103 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*102 %*	*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: MW-1 52-57

Lab ID: 1610158-05

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	

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ENVIRONMENTAL LABORATORY

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Client ID: MW-1 52-57

Lab ID: 1610158-05

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	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			*101 %*	*85-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*10/28/16*	B6J2801	*8260*	
Surrogate: Toluene-d8			*102 %*	*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
16158	COLBATH E41 PFC Contamination	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000153	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	457189			
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 12-17	10/11/16			
2	02	MW-1 22-27				
3	03	MW-1 32-37				
4	04	MW-1 42-47				
5	05	MW-1 52-57				
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	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:		10/13/16 1520
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

02 December 2016

Work Order: 1610240

Price: $1,495.00

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

RE: COLBATH PFC CONTAMINATION

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: COLBATH PFC CONTAMINATION
Site Code: 35000153
Project Manager: Mike Jury

Reported:
12/02/2016

Analytical Report for Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Qualifier
MW-3 12-17	1610240-01	Water	10/24/2016	10/28/2016	
MW-3 22-27	1610240-02	Water	10/24/2016	10/28/2016	
MW-3 32-37	1610240-03	Water	10/24/2016	10/28/2016	
MW-3 42-47	1610240-04	Water	10/24/2016	10/28/2016	
MW-4 16-21	1610240-05	Water	10/24/2016	10/28/2016	
MW-4 26-31	1610240-06	Water	10/24/2016	10/28/2016	
MW-4 36-41	1610240-07	Water	10/24/2016	10/28/2016	
MW-4 46-51	1610240-08	Water	10/24/2016	10/28/2016	
MW-5 22-27	1610240-09	Water	10/25/2016	10/28/2016	
MW-2 22-27	1610240-10	Water	10/25/2016	10/28/2016	
MW-2 22-27 DUP	1610240-11	Water	10/25/2016	10/28/2016	
MW-2 32-37	1610240-12	Water	10/25/2016	10/28/2016	
MW-2 42-47	1610240-13	Water	10/25/2016	10/28/2016	

Notes and Definitions

Y19	Sample received with headspace in vial. Data is 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.
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.
ND	Indicates compound analyzed for but not detected
RL	Reporting Limit
NA	Not Applicable

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

Client ID: MW-3 12-17

Lab ID: 1610240-01

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	11/03/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/03/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	

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

Client ID: MW-3 12-17

Lab ID: 1610240-01

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/03/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/03/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
108-88-3	**Toluene**	**1.6**	1.0	ug/L	1	11/03/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*101 %*	*85-115*		*11/03/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*106 %*	*82.7-115*		*11/03/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*103 %*	*85-115*		*11/03/16*	B6K0302	*8260*	

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

Client ID: MW-3 22-27

Lab ID: 1610240-02

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	11/03/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/03/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	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 22-27

Lab ID: 1610240-02

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/03/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/03/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*104 %*	*85-115*		*11/03/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*107 %*	*82.7-115*		*11/03/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*103 %*	*85-115*		*11/03/16*	B6K0302	*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 32-37

Lab ID: 1610240-03

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	11/03/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/03/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	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 32-37

Lab ID: 1610240-03

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/03/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/03/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/03/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/03/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*104 %*	*85-115*		*11/03/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*106 %*	*82.7-115*		*11/03/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*11/03/16*	B6K0302	*8260*	

Lab Work Order # 1610240

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 42-47

Lab ID: 1610240-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	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 42-47

Lab ID: 1610240-04

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*105 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*107 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*104 %*	*85-115*		*11/04/16*	B6K0302	*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 16-21

Lab ID: 1610240-05

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	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	

STATE OF MICHIGAN
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ENVIRONMENTAL LABORATORY

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

Client ID: MW-4 16-21

Lab ID: 1610240-05

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*105 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*105 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*103 %*	*85-115*		*11/04/16*	B6K0302	*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 26-31

Lab ID: 1610240-06

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	

STATE OF MICHIGAN
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ENVIRONMENTAL LABORATORY

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TEL: (517) 335-9800
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Client ID: MW-4 26-31

Lab ID: 1610240-06

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	**Toluene**	**1.7**	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*102 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*105 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*104 %*	*85-115*		*11/04/16*	B6K0302	*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: MW-4 36-41

Lab ID: 1610240-07

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	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	

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Client ID: MW-4 36-41

Lab ID: 1610240-07

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*104 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*108 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*11/04/16*	B6K0302	*8260*	

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

Client ID: MW-4 46-51

Lab ID: 1610240-08

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	

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Client ID: MW-4 46-51

Lab ID: 1610240-08

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*105 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*105 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*11/04/16*	B6K0302	*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 22-27

Lab ID: 1610240-09

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	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	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: MW-5 22-27

Lab ID: 1610240-09

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*104 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*105 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*11/04/16*	B6K0302	*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-2 22-27

Lab ID: 1610240-10

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	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	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-2 22-27

Lab ID: 1610240-10

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*104 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*106 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*11/04/16*	B6K0302	*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-2 22-27 DUP

Lab ID: 1610240-11

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	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	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-2 22-27 DUP

Lab ID: 1610240-11

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	Toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*104 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*105 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*102 %*	*85-115*		*11/04/16*	B6K0302	*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-2 32-37

Lab ID: 1610240-12

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	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-2 32-37

Lab ID: 1610240-12

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	**Toluene**	**1.3**	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*104 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*105 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*103 %*	*85-115*		*11/04/16*	B6K0302	*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-2 42-47

Lab ID: 1610240-13

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
96-18-4	1,2,3-Trichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
526-73-8	1,2,3-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
95-63-6	1,2,4-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
96-12-8	1,2-Dibromo-3-chloropropane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-67-8	1,3,5-Trimethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
591-78-6	2-Hexanone	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
67-64-1	2-Propanone (acetone)	ND	20	ug/L	1	11/04/16	B6K0302	8260	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
107-13-1	Acrylonitrile	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
71-43-2	Benzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-86-1	Bromobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-97-5	Bromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-27-4	Bromodichloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-25-2	Bromoform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-83-9	Bromomethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
75-15-0	Carbon disulfide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
56-23-5	Carbon tetrachloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
108-90-7	Chlorobenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-00-3	Chloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-66-3	Chloroform	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
74-87-3	Chloromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-01-5	cis-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-82-7	Cyclohexane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
124-48-1	Dibromochloromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	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-2 42-47

Lab ID: 1610240-13

CAS #	Analyte	Result	RL	Units	Dilution	Analyzed Date	QC Batch	Method	Qualifier
Organics-Volatiles									**See note Y19**
74-95-3	Dibromomethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
60-29-7	Diethyl ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-20-3	Diisopropyl Ether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
100-41-4	Ethylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
637-92-3	Ethyltertiarybutylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
67-72-1	Hexachloroethane	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
98-82-8	Isopropylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
1330-20-7	m & p - Xylene	ND	2.0	ug/L	1	11/04/16	B6K0302	8260	
74-88-4	Methyl iodide	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-09-2	Methylene chloride	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
1634-04-4	Methyltertiarybutylether	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
91-20-3	Naphthalene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	X
104-51-8	n-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
103-65-1	n-Propylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
95-47-6	o-Xylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
99-87-6	p-Isopropyl toluene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
135-98-8	sec-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
100-42-5	Styrene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
98-06-6	tert-Butylbenzene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-65-0	tertiary Butyl Alcohol	ND	50	ug/L	1	11/04/16	B6K0302	8260	
994-05-8	tertiaryAmylmethylether	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
127-18-4	Tetrachloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	A05
109-99-9	Tetrahydrofuran	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
108-88-3	**Toluene**	**1.2**	1.0	ug/L	1	11/04/16	B6K0302	8260	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
10061-02-6	trans-1,3-Dichloropropylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
110-57-6	trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	1	11/04/16	B6K0302	8260	
79-01-6	Trichloroethylene	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
75-01-4	Vinyl chloride	ND	1.0	ug/L	1	11/04/16	B6K0302	8260	
Surrogate: Bromofluorobenzene			*102 %*	*85-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Dibromofluoromethane			*105 %*	*82.7-115*		*11/04/16*	B6K0302	*8260*	
Surrogate: Toluene-d8			*100 %*	*85-115*		*11/04/16*	B6K0302	*8260*	

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number: 1610240

Project Name: 6 COLBATH RD / F-41 PFC Contamination

Matrix: WATER

Site Code/Project Number: 35000153	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: 457189	Overflow Lab Choice 1:	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-3 12-17	10-24-16			
2		MW-3 22-27				
3		MW-3 32-37				
4		MW-3 42-47				
5		MW-4 16-21				
6		MW-4 26-31				
7		MW-4 36-41				
8		MW-4 46-51	10-24-16			
9		MW-5 22-27	10-25-16			
10		MW-2 22-27	10-25-16			

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	Jordan Hadley MDEQ	10/25/16 1140
Signature:			
Print Name & Org.			
Signature:			
Print Name & Org.			
Signature:			

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
1610240	COLBATH RD / F-41 PFC Contamination	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000153	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	457189			
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-2 22-27 DUP	10-25-16			
2		MW-2 32-37	10-25-16			
3		MW-2 42-47	10-25-16			
4						
5						
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 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	Jordan Hardick MDEQ	10/25/16 1146
Signature:			
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: 1611130

Price: $575.00

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

RE: COLBATH PFC CONTAMINATION

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

Project: COLBATH PFC CONTAMINATION
Site Code: 35000153
Project Manager: Mike Jury

Reported:
12/06/2016

Analytical Report for Samples

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Qualifier
MW-1	1611130-01	Water	11/14/2016	11/15/2016	
MW-1 DUP	1611130-02	Water	11/14/2016	11/15/2016	
MW-2	1611130-03	Water	11/14/2016	11/15/2016	
MW-3	1611130-04	Water	11/14/2016	11/15/2016	
MW-5	1611130-05	Water	11/14/2016	11/15/2016	

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-1

Lab ID: 1611130-01

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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Client ID: MW-1

Lab ID: 1611130-01

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			*99.1 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*99.0 %*	*85-115*		*11/18/16*	B6K1718	*8260*	

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

Client ID: MW-1 DUP

Lab ID: 1611130-02

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	

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Client ID: MW-1 DUP

Lab ID: 1611130-02

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			*99.9 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*104 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*99.5 %*	*85-115*		*11/18/16*	B6K1718	*8260*	

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Client ID: MW-2

Lab ID: 1611130-03

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	

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-2

Lab ID: 1611130-03

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			*99.7 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*103 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*97.9 %*	*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-3

Lab ID: 1611130-04

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	

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: 1611130-04

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			*100 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*99.8 %*	*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-5

Lab ID: 1611130-05

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	

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

Lab ID: 1611130-05

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			*101 %*	*85-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Dibromofluoromethane			*102 %*	*82.7-115*		*11/18/16*	B6K1718	*8260*	
Surrogate: Toluene-d8			*101 %*	*85-115*		*11/18/16*	B6K1718	*8260*	

Michigan Department of Environmental Quality
Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
16111Jo	Colbath Road / F-41 PCE	WATER

Site Code/Project Number: 35000153	AY: 17	CC Email 1: pincumbej	Project TAT Days:	Sample Collector: Jeff Pincumbe	
Dept-Division-District: DEQ-RRD-Saginwa-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: 457189	Overflow Lab Choice 1:	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	01	MW-1	11-14-16			
2	02	MW-1 Dup	11-14-16			
3	03	MW-2	11-14-16			
4	04	MW-3	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	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:		DSC	11/15/16 1405
Print Name & Org.			
Signature:			
Print Name & Org.			
Signature:			

APPENDIX C

F-41 PFC Contamination/Colbath Road Drive, Iosco County
Site ID #53000154

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: 320-23105-1
Client Project/Site: Wurtsmith - 3500058-Colbath

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 9:05:39 PM

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

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

Table of Contents

Definitions/Glossary

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

TestAmerica Job ID: 320-23105-1

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: 320-23105-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: Michigan Dept. of Environmental Quality

Project: Wurtsmith - 3500058-Colbath

Report Number: 320-23105-1

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 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 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.

Except: The following samples were received at the laboratory without a sample collection time documented on the chain of custody. None of the samples listed on the CoC have times associated with the samples, on both the CoC and the containers. The client has not yet been contacted: The following samples were received outside of holding time: MW-1 12-17 (320-23105-1), MW -1 22-27 (320-23105-2), MW-1 32-37 (320-23105-3), MW-1 42-47 (320-23105-4) and MW-1 52-57 (320-23105-5).

Samples 1-5 were received out of hold. Hold Time Violation Notice sent. The client has not yet been contacted.

PERFLUORINATED HYDROCARBONS

Samples MW-1 12-17 (320-23105-1), MW -1 22-27 (320-23105-2), MW-1 32-37 (320-23105-3), MW-1 42-47 (320-23105-4) and MW-1 52-57 (320-23105-5) 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.

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.

Job ID: 320-23105-1 (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 12-17 (320-23105-1), MW -1 22-27 (320-23105-2), MW-1 32-37 (320-23105-3), MW-1 42-47 (320-23105-4) and MW-1 52-57 (320-23105-5).

The Isotope Dilution Analyte (IDA) recovery for 13C8 FOSA the following samples is below the method recommended limit: MW-1 12-17 (320-23105-1), MW -1 22-27 (320-23105-2), MW-1 32-37 (320-23105-3), MW-1 42-47 (320-23105-4), MW-1 52-57 (320-23105-5), (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 22-27 (320-23105-2). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

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 12-17 (320-23105-1), MW -1 22-27 (320-23105-2), MW-1 32-37 (320-23105-3), MW-1 42-47 (320-23105-4) and MW-1 52-57 (320-23105-5).

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-Colbath

TestAmerica Job ID: 320-23105-1

Client Sample ID: MW-1 12-17 — Lab Sample ID: 320-23105-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	1.0	J B	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.22	J	2.0	0.12	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW -1 22-27 — Lab Sample ID: 320-23105-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.0		2.0	0.46	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.31	J	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.31	J	2.0	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.92	J	2.0	0.88	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1 32-37 — Lab Sample ID: 320-23105-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.2	J	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.9		1.9	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.79	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
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	1.9	0.84	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1 42-47 — Lab Sample ID: 320-23105-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.3	J	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.82	J	2.0	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.6	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
Perfluorohexanesulfonic acid (PFHxS)	0.90	J	2.0	0.85	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1 52-57 — Lab Sample ID: 320-23105-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.66	J	1.9	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.94	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.29	J	1.9	0.12	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-Colbath

TestAmerica Job ID: 320-23105-1

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-Colbath

TestAmerica Job ID: 320-23105-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23105-1	MW-1 12-17	Water	10/21/16 00:00	10/28/16 09:45
320-23105-2	MW -1 22-27	Water	10/21/16 00:00	10/28/16 09:45
320-23105-3	MW-1 32-37	Water	10/21/16 00:00	10/28/16 09:45
320-23105-4	MW-1 42-47	Water	10/21/16 00:00	10/28/16 09:45
320-23105-5	MW-1 52-57	Water	10/21/16 00:00	10/28/16 09:45

Client Sample ID: MW-1 12-17

Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-1

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		2.0	0.46	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.78	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorotetradecanoic acid (PFTeA)	**1.0**	**J B**	2.0	0.20	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.22**	**J**	2.0	0.12	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.91	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/31/16 18:00	11/02/16 22:28	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		10/31/16 18:00	11/02/16 22:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*106*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C4 PFOA	*76*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C8 FOSA	*6*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C4 PFBA	*53*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C2 PFHxA	*92*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C5 PFNA	*65*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C2 PFDA	*62*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C2 PFUnA	*73*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C2 PFDoA	*83*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
18O2 PFHxS	*103*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C4-PFHpA	*84*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*
13C5-PFPeA	*87*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:28*	*1*

Client Sample ID: MW -1 22-27

Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-2

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.0**		2.0	0.46	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.76	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	1.0	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.81	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.66	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.76	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.59	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.56	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorotetradecanoic acid (PFTeA)	**0.31**	**J**	2.0	0.20	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.31**	**J**	2.0	0.12	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.68	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.93	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorohexanesulfonic acid (PFHxS)	**0.92**	**J**	2.0	0.88	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.72	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/31/16 18:00	11/02/16 22:36	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		10/31/16 18:00	11/02/16 22:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*104*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C4 PFOA	*78*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C8 FOSA	*13*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C4 PFBA	*23*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C2 PFHxA	*81*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C5 PFNA	*64*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C2 PFDA	*62*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C2 PFUnA	*68*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C2 PFDoA	*78*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
18O2 PFHxS	*95*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C4-PFHpA	*84*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*
13C5-PFPeA	*58*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:36*	*1*

Client Sample ID: MW-1 32-37

Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-3

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.2**	**J**	1.9	0.44	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorooctanoic acid (PFOA)	**1.9**		1.9	0.72	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.95	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorohexanoic acid (PFHxA)	**0.79**	**J**	1.9	0.75	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.77	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorotetradecanoic acid (PFTeA)	**1.0**	**J B**	1.9	0.19	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.88	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorohexanesulfonic acid (PFHxS)	**1.4**	**J**	1.9	0.84	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		10/31/16 18:00	11/02/16 22:43	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		10/31/16 18:00	11/02/16 22:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*104*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C4 PFOA	*81*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C4 PFBA	*42*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C2 PFHxA	*95*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C5 PFNA	*66*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C2 PFDA	*63*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C2 PFUnA	*74*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C2 PFDoA	*84*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
18O2 PFHxS	*102*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C4-PFHpA	*91*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*
13C5-PFPeA	*80*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:43*	*1*

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

TestAmerica Job ID: 320-23105-1

Client Sample ID: MW-1 42-47
Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-4
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.3**	**J**	2.0	0.45	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorooctanoic acid (PFOA)	**0.82**	**J**	2.0	0.73	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.97	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.77	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.79	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.64	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.43	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.73	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.57	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.54	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorotetradecanoic acid (PFTeA)	**1.6**	**J B**	2.0	0.20	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.41**	**J**	2.0	0.12	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.66	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.90	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorohexanesulfonic acid (PFHxS)	**0.90**	**J**	2.0	0.85	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.70	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		10/31/16 18:00	11/02/16 22:51	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.63	ng/L		10/31/16 18:00	11/02/16 22:51	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*95*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C4 PFOA	*64*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C4 PFBA	*42*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C2 PFHxA	*88*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C5 PFNA	*51*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C2 PFDA	*47*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C2 PFUnA	*55*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C2 PFDoA	*72*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
18O2 PFHxS	*91*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C4-PFHpA	*78*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*
13C5-PFPeA	*79*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:51*	*1*

Client Sample ID: MW-1 52-57
Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-5
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.66**	**J**	1.9	0.45	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.73	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.96	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.76	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.78	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.64	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.43	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.73	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.57	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.54	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorotetradecanoic acid (PFTeA)	**0.94**	**J B**	1.9	0.19	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.29**	**J**	1.9	0.12	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.89	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.85	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.69	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		10/31/16 18:00	11/02/16 22:58	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.62	ng/L		10/31/16 18:00	11/02/16 22:58	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*111*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C4 PFOA	*87*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C8 FOSA	*4*	*	*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C4 PFBA	*56*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C2 PFHxA	*103*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C5 PFNA	*73*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C2 PFDA	*67*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C2 PFUnA	*72*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C2 PFDoA	*83*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
18O2 PFHxS	*106*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C4-PFHpA	*96*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*
13C5-PFPeA	*93*		*25 - 150*	*10/31/16 18:00*	*11/02/16 22:58*	*1*

Isotope Dilution Summary

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

TestAmerica Job ID: 320-23105-1

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 PFHxA (25-150)	3C5 PFNA (25-150)	3C2 PFDA (25-150)	3C2 PFUnA (25-150)
320-23105-1	MW-1 12-17	106	76	6 *	53	92	65	62	73
320-23105-2	MW -1 22-27	104	78	13 *	23 *	81	64	62	68
320-23105-3	MW-1 32-37	104	81	3 *	42	95	66	63	74
320-23105-4	MW-1 42-47	95	64	2 *	42	88	51	47	55
320-23105-5	MW-1 52-57	111	87	4 *	56	103	73	67	72
LCS 320-135358/2-A	Lab Control Sample	107	114	17 *	112	106	112	111	109
LCSD 320-135358/3-A	Lab Control Sample Dup	103	103	9 *	105	100	102	111	106
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)				
320-23105-1	MW-1 12-17	83	103	84	87				
320-23105-2	MW -1 22-27	78	95	84	58				
320-23105-3	MW-1 32-37	84	102	91	80				
320-23105-4	MW-1 42-47	72	91	78	79				
320-23105-5	MW-1 52-57	83	106	96	93				
LCS 320-135358/2-A	Lab Control Sample	107	106	106	111				
LCSD 320-135358/3-A	Lab Control Sample Dup	105	102	102	104				
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

Method: 537 (modified) - Perfluorinated Hydrocarbons

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*

QC Association Summary

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

TestAmerica Job ID: 320-23105-1

LCMS

Prep Batch: 135358

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23105-1	MW-1 12-17	Total/NA	Water	3535	
320-23105-2	MW -1 22-27	Total/NA	Water	3535	
320-23105-3	MW-1 32-37	Total/NA	Water	3535	
320-23105-4	MW-1 42-47	Total/NA	Water	3535	
320-23105-5	MW-1 52-57	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
320-23105-1	MW-1 12-17	Total/NA	Water	537 (modified)	135358
320-23105-2	MW -1 22-27	Total/NA	Water	537 (modified)	135358
320-23105-3	MW-1 32-37	Total/NA	Water	537 (modified)	135358
320-23105-4	MW-1 42-47	Total/NA	Water	537 (modified)	135358
320-23105-5	MW-1 52-57	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: 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: Wurtsmith - 3500058-Colbath

TestAmerica Job ID: 320-23105-1

Client Sample ID: MW-1 12-17

Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-1
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			251 mL	0.50 mL	135358	10/31/16 18:00	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 22:28	SBC	TAL SAC

Client Sample ID: MW -1 22-27

Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-2
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			247.4 mL	0.50 mL	135358	10/31/16 18:00	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 22:36	SBC	TAL SAC

Client Sample ID: MW-1 32-37

Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-3
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			260.4 mL	0.50 mL	135358	10/31/16 18:00	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 22:43	SBC	TAL SAC

Client Sample ID: MW-1 42-47

Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-4
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			255.1 mL	0.50 mL	135358	10/31/16 18:00	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 22:51	SBC	TAL SAC

Client Sample ID: MW-1 52-57

Date Collected: 10/21/16 00:00
Date Received: 10/28/16 09:45

Lab Sample ID: 320-23105-5
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			257.1 mL	0.50 mL	135358	10/31/16 18:00	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1			135762	11/02/16 22:58	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-Colbath

TestAmerica Job ID: 320-23105-1

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-Colbath

TestAmerica Job ID: 320-23105-1

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
	COLBATH ~~F-41~~ PFC Contamination	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000153	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		**Accept Analysis hold time codes**	
State Project Manager Email	**Project**	**Overflow Lab Choice 1**		**Contract Firm Primary Contact**
jurym1	457189	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 12-17	10-21-16			
2		MW-1 22-27				FOR PFC ANALYSES
3		MW-1 32-37				
4		MW-1 42-47				
5		MW-1 52-57				
6						
7						
8						
9						
10						

320-23105 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	Melissa Smith	
Signature:			10/21/16 1515
Print Name & Org.	Joshua Perry MDEQ	MARK JORDAN TESTAMERICA	10/27/16 1157
Signature:			
Print Name & Org.	MARK JORDAN TESTAMERICA	Troy Christensen TAS	10/28/16 09:45
Signature:			

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

320-23105 Field Sheet

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: 960352

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: RM 10/28/16

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: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
960352

Custody Seal

DATE 10/26/17

SIGNATURE

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
960352

Login Sample Receipt Checklist

Client: Michigan Dept. of Environmental Quality

Job Number: 320-23105-1

Login Number: 23105

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	960352
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.	False	No time on COC or containers.
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: 320-23158-1
Client Project/Site: Wurtsmith - 3500058 - Colbath Rd-F-41

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:
11/11/2016 8:49:31 PM

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

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

Table of Contents

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.
H	Sample was prepped or analyzed beyond the specified holding time

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: 320-23158-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: Michigan Dept. of Environmental Quality

Project: Wurtsmith - 3500058 - Colbath Rd-F-41

Report Number: 320-23158-1

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 11/1/2016 9:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. No times listed on COC or sample labels.

The following samples were submitted for analysis; however, they were not listed on the Chain-of-Custody (COC): MW-3 12-17 (320-23158-1), MW-3 22-27 (320-23158-2), MW-3 32-37 (320-23158-3), MW-3 42-47 (320-23158-4), MW-4 16-21 (320-23158-5), MW-4 26-31 (320-23158-6), MW-4 36-41 (320-23158-7), MW-4 46-51 (320-23158-8), MW-5 22-27 (320-23158-9), MW-2 22-27 (320-23158-10), MW-2 22-27 DUP (320-23158-11), MW-2-32-37 (320-23158-12) and MW-2-42-47 (320-23158-13)

PERFLUORINATED HYDROCARBONS

Samples MW-3 12-17 (320-23158-1), MW-3 22-27 (320-23158-2), MW-3 32-37 (320-23158-3), MW-3 42-47 (320-23158-4), MW-4 16-21 (320-23158-5), MW-4 26-31 (320-23158-6), MW-4 36-41 (320-23158-7), MW-4 46-51 (320-23158-8), MW-5 22-27 (320-23158-9), MW-2 22-27 (320-23158-10), MW-2 22-27 DUP (320-23158-11), MW-2-32-37 (320-23158-12) and MW-2-42-47 (320-23158-13) were analyzed for Perfluorinated Hydrocarbons in accordance with SOP WS-OC-0025. The samples were prepared on 11/02/2016 and analyzed on

Job ID: 320-23158-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

11/03/2016 and 11/08/2016.

Perfluorobutanoic acid (PFBA), Perfluorohexanesulfonic acid (PFHxS) and Perfluorotetradecanoic acid (PFTeA) were detected in method blank MB 320-135666/1-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. Perfluorobutanoic acid (PFBA) and Perfluorotetradecanoic acid (PFTeA) were detected in method blank MB 320-135789/1-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.

Perfluorotetradecanoic acid (PFTeA) failed the recovery criteria high for LCSD 320-135666/3-A. Refer to the QC report for details.

The laboratory control sample duplicate (LCSD) for preparation batch 320-135666 and analytical batch 320-136074 recovered outside control limits for the following analytes: Perfluorotetradecanoic acid (PFTeA). This analyte was biased high in the LCSD and was below the reporting limit in the associated samples; therefore, the data have been reported.

The Isotope Dilution Analyte (IDA) recovery for 13C8 FOSA in the following samples is below the method recommended limit: MW-3 12-17 (320-23158-1), MW-3 22-27 (320-23158-2), MW-3 32-37 (320-23158-3), MW-3 42-47 (320-23158-4), MW-4 16-21 (320-23158-5), MW-4 26-31 (320-23158-6), MW-4 36-41 (320-23158-7), MW-4 46-51 (320-23158-8), MW-5 22-27 (320-23158-9), MW-2 22-27 (320-23158-10), MW-2 22-27 DUP (320-23158-11) and (LCS 320-135666/2-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 is above the method recommended limit for 13C2-PFTeDA in the following samples: (LCSD 320-135666/3-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

The Isotope Dilution Analyte (IDA) recovery for 13C8 FOSA in the following samples is below the method recommended limit: MW-2-32-37 (320-23158-12), MW-2-42-47 (320-23158-13) and (LCSD 320-135789/3-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.

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.
MW-3 12-17 (320-23158-1), MW-3 22-27 (320-23158-2), MW-3 32-37 (320-23158-3), MW-3 42-47 (320-23158-4), MW-4 16-21 (320-23158-5), MW-4 26-31 (320-23158-6), MW-4 36-41 (320-23158-7), MW-4 46-51 (320-23158-8), MW-5 22-27 (320-23158-9), MW-2 22-27 (320-23158-10) and MW-2 22-27 DUP (320-23158-11)

Due to the excessive amount of sediment in these samples, the aqueous portion was decanted to new 250 mL poly bottles prior to spiking and the extraction. MW-2-42-47 (320-23158-13)

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 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Client Sample ID: MW-3 12-17 — Lab Sample ID: 320-23158-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.5	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.4	J	1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.68	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)	0.16	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.99	J	1.9	0.87	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.84	J	1.9	0.60	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 22-27 — Lab Sample ID: 320-23158-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.1	J B	2.1	0.48	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	2.1	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.4	J * B	2.1	0.21	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.41	J	2.1	0.13	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.0	J B	2.1	0.91	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 32-37 — Lab Sample ID: 320-23158-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.1	B	2.1	0.47	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	2.1	0.78	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.27	J * B	2.1	0.21	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.32	J	2.1	0.13	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 42-47 — Lab Sample ID: 320-23158-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.6	J B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1.0	J	1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.6	J * B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.23	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-4 16-21 — Lab Sample ID: 320-23158-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.2	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.7		1.9	0.69	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	17		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.6	J	1.9	0.92	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	2.1		1.9	0.73	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.1	J	1.9	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.61	J	1.9	0.61	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.2	J * B	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.84	J	1.9	0.11	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	10		1.9	0.85	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.9	B	1.9	0.81	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 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Client Sample ID: MW-4 26-31 — Lab Sample ID: 320-23158-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.8	J B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	5.1		1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	20		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.3	J	1.9	0.92	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.3	J	1.9	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.95	J	1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.61	J	1.9	0.61	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.2	J	1.9	0.41	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.8	J * B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.46	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	31		1.9	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.6	B	1.9	0.81	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-4 36-41 — Lab Sample ID: 320-23158-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	9.8	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.2		1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	7.6		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.4		1.9	0.92	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.0		1.9	0.73	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0		1.9	0.75	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
Perfluorobutanesulfonic acid (PFBS)	12		1.9	0.85	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.0	B	1.9	0.81	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-4 46-51 — Lab Sample ID: 320-23158-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.8	B	1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.3		1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.8		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.1	J	1.9	0.94	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.6	J	1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.88	J	1.9	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.62	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)	3.0		1.9	0.87	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.6	J B	1.9	0.83	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-5 22-27 — Lab Sample ID: 320-23158-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.95	J 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

Client Sample ID: MW-2 22-27 — Lab Sample ID: 320-23158-10

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample ID: MW-2 22-27 (Continued) — Lab Sample ID: 320-23158-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.9	B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	8.0		1.9	0.70	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	9.0		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.3		1.9	0.93	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.3		1.9	0.74	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.4		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)	0.29	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.91	J	1.9	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.2	B	1.9	0.81	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2 22-27 DUP — Lab Sample ID: 320-23158-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.8	J B	1.9	0.43	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	7.3		1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	9.0		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	3.3		1.9	0.94	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)	2.4		1.9	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorotridecanoic Acid (PFTriA)	0.56	J	1.9	0.52	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.77	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)	0.93	J	1.9	0.87	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.3	B	1.9	0.82	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2-32-37 — Lab Sample ID: 320-23158-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.3	J H B	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	3.5	H	2.0	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.8	H	2.0	1.3	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	1.4	J H	2.0	0.97	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	1.9	J H	2.0	0.77	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.87	J H	2.0	0.79	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.48	J H B	2.0	0.20	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.8	J H	2.0	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	1.2	J H	2.0	0.63	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-2-42-47 — Lab Sample ID: 320-23158-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1.3	J B	2.0	0.45	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	4.3		2.0	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	3.1		2.0	1.3	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
Perfluorohexanesulfonic acid (PFHxS)	0.86	J	2.0	0.86	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	1.4	J	2.0	0.63	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 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

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 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23158-1	MW-3 12-17	Water	10/24/16 00:00	11/01/16 09:55
320-23158-2	MW-3 22-27	Water	10/24/16 00:00	11/01/16 09:55
320-23158-3	MW-3 32-37	Water	10/24/16 00:00	11/01/16 09:55
320-23158-4	MW-3 42-47	Water	10/24/16 00:00	11/01/16 09:55
320-23158-5	MW-4 16-21	Water	10/24/16 00:00	11/01/16 09:55
320-23158-6	MW-4 26-31	Water	10/24/16 00:00	11/01/16 09:55
320-23158-7	MW-4 36-41	Water	10/24/16 00:00	11/01/16 09:55
320-23158-8	MW-4 46-51	Water	10/24/16 00:00	11/01/16 09:55
320-23158-9	MW-5 22-27	Water	10/25/16 00:00	11/01/16 09:55
320-23158-10	MW-2 22-27	Water	10/25/16 00:00	11/01/16 09:55
320-23158-11	MW-2 22-27 DUP	Water	10/25/16 00:00	11/01/16 09:55
320-23158-12	MW-2-32-37	Water	10/25/16 00:00	11/01/16 09:55
320-23158-13	MW-2-42-47	Water	10/25/16 00:00	11/01/16 09:55

Client Sample ID: MW-3 12-17
Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-1
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.5**	**B**	1.9	0.43	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorooctanoic acid (PFOA)	**1.4**	**J**	1.9	0.71	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.93	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.74	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorodecanoic acid (PFDA)	**0.68**	**J**	1.9	0.42	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorotetradecanoic acid (PFTeA)	**1.1**	**J * B**	1.9	0.19	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.16**	**J**	1.9	0.12	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorobutanesulfonic acid (PFBS)	**0.99**	**J**	1.9	0.87	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.82	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/02/16 10:06	11/03/16 21:08	1
Perfluorooctane Sulfonamide (FOSA)	**0.84**	**J**	1.9	0.60	ng/L		11/02/16 10:06	11/03/16 21:08	1
6:2FTS	ND		19	3.6	ng/L		11/02/16 10:06	11/03/16 21:08	1
8:2FTS	ND		19	3.8	ng/L		11/02/16 10:06	11/03/16 21:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*103*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C4 PFOA	*85*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C8 FOSA	*10*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C4 PFBA	*58*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C2 PFHxA	*91*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C5 PFNA	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C2 PFDA	*95*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C2 PFUnA	*95*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C2 PFDoA	*99*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
18O2 PFHxS	*101*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C4-PFHpA	*85*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
13C5-PFPeA	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
M2-6:2FTS	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*
M2-8:2FTS	*104*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:08*	*1*

Client Sample ID: MW-3 22-27
Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-2
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.1**	**J B**	2.1	0.48	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	2.1	0.78	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorooctane Sulfonate (PFOS)	ND		2.1	1.3	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluoropentanoic acid (PFPeA)	ND		2.1	1.0	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorohexanoic acid (PFHxA)	ND		2.1	0.82	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.84	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.68	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.46	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	0.78	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.61	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.1	0.58	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorotetradecanoic acid (PFTeA)	**1.4**	**J * B**	2.1	0.21	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.41**	**J**	2.1	0.13	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.1	0.70	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.96	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorohexanesulfonic acid (PFHxS)	**1.0**	**J B**	2.1	0.91	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.1	0.75	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.1	1.3	ng/L		11/02/16 10:06	11/03/16 21:15	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.1	0.67	ng/L		11/02/16 10:06	11/03/16 21:15	1
6:2FTS	ND		21	4.0	ng/L		11/02/16 10:06	11/03/16 21:15	1
8:2FTS	ND		21	4.2	ng/L		11/02/16 10:06	11/03/16 21:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*98*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C4 PFOA	*73*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C4 PFBA	*28*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C2 PFHxA	*80*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C5 PFNA	*61*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C2 PFDA	*58*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C2 PFUnA	*70*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C2 PFDoA	*79*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
18O2 PFHxS	*90*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C4-PFHpA	*80*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
13C5-PFPeA	*64*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
M2-6:2FTS	*99*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*
M2-8:2FTS	*115*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:15*	*1*

Client Sample ID: MW-3 32-37
Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-3
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.1**	**B**	2.1	0.47	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	2.1	0.78	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorooctane Sulfonate (PFOS)	ND		2.1	1.3	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluoropentanoic acid (PFPeA)	ND		2.1	1.0	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorohexanoic acid (PFHxA)	ND		2.1	0.82	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.83	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorononanoic acid (PFNA)	ND		2.1	0.68	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorodecanoic acid (PFDA)	ND		2.1	0.46	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluoroundecanoic acid (PFUnA)	ND		2.1	0.78	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorododecanoic acid (PFDoA)	ND		2.1	0.61	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.1	0.57	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorotetradecanoic acid (PFTeA)	**0.27**	**J * B**	2.1	0.21	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.32**	**J**	2.1	0.13	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.1	0.70	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.95	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.1	0.90	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.1	0.74	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.1	1.3	ng/L		11/02/16 10:06	11/03/16 21:53	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.1	0.66	ng/L		11/02/16 10:06	11/03/16 21:53	1
6:2FTS	ND		21	4.0	ng/L		11/02/16 10:06	11/03/16 21:53	1
8:2FTS	ND		21	4.2	ng/L		11/02/16 10:06	11/03/16 21:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*100*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C4 PFOA	*75*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C4 PFBA	*35*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C2 PFHxA	*88*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C5 PFNA	*69*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C2 PFDA	*69*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C2 PFUnA	*78*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C2 PFDoA	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
18O2 PFHxS	*92*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C4-PFHpA	*82*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
13C5-PFPeA	*70*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
M2-6:2FTS	*93*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*
M2-8:2FTS	*104*		*25 - 150*	*11/02/16 10:06*	*11/03/16 21:53*	*1*

Client Sample ID: MW-3 42-47
Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-4
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.6**	**J B**	1.9	0.43	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorooctanoic acid (PFOA)	**1.0**	**J**	1.9	0.70	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.93	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.74	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.75	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorotetradecanoic acid (PFTeA)	**1.6**	**J * B**	1.9	0.19	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.23**	**J**	1.9	0.12	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.86	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.82	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/02/16 10:06	11/03/16 22:00	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		11/02/16 10:06	11/03/16 22:00	1
6:2FTS	ND		19	3.6	ng/L		11/02/16 10:06	11/03/16 22:00	1
8:2FTS	ND		19	3.8	ng/L		11/02/16 10:06	11/03/16 22:00	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*99*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C4 PFOA	*75*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C8 FOSA	*4*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C4 PFBA	*36*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C2 PFHxA	*86*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C5 PFNA	*69*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C2 PFDA	*65*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C2 PFUnA	*71*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C2 PFDoA	*83*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
18O2 PFHxS	*95*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C4-PFHpA	*85*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
13C5-PFPeA	*74*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
M2-6:2FTS	*88*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*
M2-8:2FTS	*101*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:00*	*1*

Client Sample ID: MW-4 16-21
Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-5
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.2**	**B**	1.9	0.43	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorooctanoic acid (PFOA)	**3.7**		1.9	0.69	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorooctane Sulfonate (PFOS)	**17**		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluoropentanoic acid (PFPeA)	**1.6**	**J**	1.9	0.92	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorohexanoic acid (PFHxA)	**2.1**		1.9	0.73	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluoroheptanoic acid (PFHpA)	**1.1**	**J**	1.9	0.74	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorononanoic acid (PFNA)	**0.61**	**J**	1.9	0.61	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.69	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.51	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorotetradecanoic acid (PFTeA)	**1.2**	**J * B**	1.9	0.18	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.84**	**J**	1.9	0.11	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.62	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorobutanesulfonic acid (PFBS)	**10**		1.9	0.85	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorohexanesulfonic acid (PFHxS)	**5.9**	**B**	1.9	0.81	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.66	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/02/16 10:06	11/03/16 22:08	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.59	ng/L		11/02/16 10:06	11/03/16 22:08	1
6:2FTS	ND		19	3.5	ng/L		11/02/16 10:06	11/03/16 22:08	1
8:2FTS	ND		19	3.7	ng/L		11/02/16 10:06	11/03/16 22:08	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*100*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C4 PFOA	*59*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C4 PFBA	*51*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C2 PFHxA	*76*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C5 PFNA	*49*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C2 PFDA	*46*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C2 PFUnA	*51*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C2 PFDoA	*62*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
18O2 PFHxS	*99*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C4-PFHpA	*71*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
13C5-PFPeA	*79*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
M2-6:2FTS	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*
M2-8:2FTS	*102*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:08*	*1*

Client Sample ID: MW-4 26-31
Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-6
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.8**	**J B**	1.9	0.43	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorooctanoic acid (PFOA)	**5.1**		1.9	0.70	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorooctane Sulfonate (PFOS)	**20**		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluoropentanoic acid (PFPeA)	**1.3**	**J**	1.9	0.92	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorohexanoic acid (PFHxA)	**1.3**	**J**	1.9	0.74	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluoroheptanoic acid (PFHpA)	**0.95**	**J**	1.9	0.75	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorononanoic acid (PFNA)	**0.61**	**J**	1.9	0.61	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorodecanoic acid (PFDA)	**1.2**	**J**	1.9	0.41	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorotetradecanoic acid (PFTeA)	**1.8**	**J * B**	1.9	0.19	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.46**	**J**	1.9	0.12	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorobutanesulfonic acid (PFBS)	**31**		1.9	0.86	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorohexanesulfonic acid (PFHxS)	**4.6**	**B**	1.9	0.81	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/02/16 10:06	11/03/16 22:15	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		11/02/16 10:06	11/03/16 22:15	1
6:2FTS	ND		19	3.6	ng/L		11/02/16 10:06	11/03/16 22:15	1
8:2FTS	ND		19	3.8	ng/L		11/02/16 10:06	11/03/16 22:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*101*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C4 PFOA	*62*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C8 FOSA	*6*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C4 PFBA	*65*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C2 PFHxA	*84*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C5 PFNA	*59*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C2 PFDA	*57*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C2 PFUnA	*67*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C2 PFDoA	*79*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
18O2 PFHxS	*99*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C4-PFHpA	*73*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
13C5-PFPeA	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
M2-6:2FTS	*95*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*
M2-8:2FTS	*103*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:15*	*1*

Client Sample ID: MW-4 36-41
Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-7
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**9.8**	**B**	1.9	0.43	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorooctanoic acid (PFOA)	**7.2**		1.9	0.70	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorooctane Sulfonate (PFOS)	**7.6**		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluoropentanoic acid (PFPeA)	**3.4**		1.9	0.92	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorohexanoic acid (PFHxA)	**5.0**		1.9	0.73	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluoroheptanoic acid (PFHpA)	**3.0**		1.9	0.75	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.51	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorotetradecanoic acid (PFTeA)	**1.5**	**J * B**	1.9	0.19	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.11	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorobutanesulfonic acid (PFBS)	**12**		1.9	0.85	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorohexanesulfonic acid (PFHxS)	**5.0**	**B**	1.9	0.81	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.66	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/02/16 10:06	11/03/16 22:23	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.59	ng/L		11/02/16 10:06	11/03/16 22:23	1
6:2FTS	ND		19	3.6	ng/L		11/02/16 10:06	11/03/16 22:23	1
8:2FTS	ND		19	3.8	ng/L		11/02/16 10:06	11/03/16 22:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*103*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C4 PFOA	*70*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C8 FOSA	*5*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C4 PFBA	*51*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C2 PFHxA	*76*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C5 PFNA	*75*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C2 PFDA	*80*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C2 PFUnA	*89*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C2 PFDoA	*94*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
18O2 PFHxS	*100*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C4-PFHpA	*73*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
13C5-PFPeA	*74*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
M2-6:2FTS	*93*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*
M2-8:2FTS	*100*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:23*	*1*

Client Sample ID: MW-4 46-51
Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-8
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**2.8**	**B**	1.9	0.44	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorooctanoic acid (PFOA)	**2.3**		1.9	0.71	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorooctane Sulfonate (PFOS)	**2.8**		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluoropentanoic acid (PFPeA)	**1.1**	**J**	1.9	0.94	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorohexanoic acid (PFHxA)	**1.6**	**J**	1.9	0.75	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluoroheptanoic acid (PFHpA)	**0.88**	**J**	1.9	0.76	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorotetradecanoic acid (PFTeA)	**0.62**	**J * B**	1.9	0.19	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.22**	**J**	1.9	0.12	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorobutanesulfonic acid (PFBS)	**3.0**		1.9	0.87	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorohexanesulfonic acid (PFHxS)	**1.6**	**J B**	1.9	0.83	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:30	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		11/02/16 10:06	11/03/16 22:30	1
6:2FTS	ND		19	3.6	ng/L		11/02/16 10:06	11/03/16 22:30	1
8:2FTS	ND		19	3.8	ng/L		11/02/16 10:06	11/03/16 22:30	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*102*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C4 PFOA	*78*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C4 PFBA	*55*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C2 PFHxA	*90*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C5 PFNA	*79*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C2 PFDA	*77*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C2 PFUnA	*81*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C2 PFDoA	*91*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
18O2 PFHxS	*99*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C4-PFHpA	*84*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
13C5-PFPeA	*88*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
M2-6:2FTS	*86*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*
M2-8:2FTS	*101*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:30*	*1*

Client Sample ID: MW-5 22-27
Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-9
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.95**	**J B**	1.9	0.44	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.94	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.75	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.77	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorotetradecanoic acid (PFTeA)	**1.4**	**J * B**	1.9	0.19	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.88	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.83	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:38	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		11/02/16 10:06	11/03/16 22:38	1
6:2FTS	ND		19	3.6	ng/L		11/02/16 10:06	11/03/16 22:38	1
8:2FTS	ND		19	3.9	ng/L		11/02/16 10:06	11/03/16 22:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*102*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C4 PFOA	*81*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C8 FOSA	*5*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C4 PFBA	*53*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C2 PFHxA	*96*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C5 PFNA	*82*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C2 PFDA	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C2 PFUnA	*94*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C2 PFDoA	*101*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
18O2 PFHxS	*100*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C4-PFHpA	*89*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
13C5-PFPeA	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
M2-6:2FTS	*91*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*
M2-8:2FTS	*101*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:38*	*1*

Client Sample ID: MW-2 22-27
Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-10
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.9**	**B**	1.9	0.43	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorooctanoic acid (PFOA)	**8.0**		1.9	0.70	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorooctane Sulfonate (PFOS)	**9.0**		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluoropentanoic acid (PFPeA)	**3.3**		1.9	0.93	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorohexanoic acid (PFHxA)	**5.3**		1.9	0.74	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluoroheptanoic acid (PFHpA)	**2.4**		1.9	0.75	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.70	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J * B**	1.9	0.19	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.29**	**J**	1.9	0.12	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorobutanesulfonic acid (PFBS)	**0.91**	**J**	1.9	0.86	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorohexanesulfonic acid (PFHxS)	**5.2**	**B**	1.9	0.81	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/02/16 10:06	11/03/16 22:45	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		11/02/16 10:06	11/03/16 22:45	1
6:2FTS	ND		19	3.6	ng/L		11/02/16 10:06	11/03/16 22:45	1
8:2FTS	ND		19	3.8	ng/L		11/02/16 10:06	11/03/16 22:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*104*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C4 PFOA	*63*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C8 FOSA	*5*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C4 PFBA	*43*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C2 PFHxA	*75*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C5 PFNA	*56*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C2 PFDA	*57*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C2 PFUnA	*66*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C2 PFDoA	*76*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
18O2 PFHxS	*98*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C4-PFHpA	*69*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
13C5-PFPeA	*70*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
M2-6:2FTS	*83*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*
M2-8:2FTS	*97*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:45*	*1*

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Client Sample ID: MW-2 22-27 DUP
Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-11
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.8**	**J B**	1.9	0.43	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorooctanoic acid (PFOA)	**7.3**		1.9	0.71	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorooctane Sulfonate (PFOS)	**9.0**		1.9	1.2	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluoropentanoic acid (PFPeA)	**3.3**		1.9	0.94	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorohexanoic acid (PFHxA)	**5.4**		1.9	0.74	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluoroheptanoic acid (PFHpA)	**2.4**		1.9	0.76	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorotridecanoic Acid (PFTriA)	**0.56**	**J**	1.9	0.52	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorotetradecanoic acid (PFTeA)	**0.77**	**J * B**	1.9	0.19	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.39**	**J**	1.9	0.12	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorobutanesulfonic acid (PFBS)	**0.93**	**J**	1.9	0.87	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorohexanesulfonic acid (PFHxS)	**5.3**	**B**	1.9	0.82	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/02/16 10:06	11/03/16 22:53	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		11/02/16 10:06	11/03/16 22:53	1
6:2FTS	ND		19	3.6	ng/L		11/02/16 10:06	11/03/16 22:53	1
8:2FTS	ND		19	3.8	ng/L		11/02/16 10:06	11/03/16 22:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*104*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C4 PFOA	*63*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C8 FOSA	*8*	*	*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C4 PFBA	*46*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C2 PFHxA	*77*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C5 PFNA	*62*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C2 PFDA	*70*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C2 PFUnA	*80*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C2 PFDoA	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
18O2 PFHxS	*101*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C4-PFHpA	*71*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
13C5-PFPeA	*74*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
M2-6:2FTS	*88*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*
M2-8:2FTS	*100*		*25 - 150*	*11/02/16 10:06*	*11/03/16 22:53*	*1*

Client Sample ID: MW-2-32-37

Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-12

Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.3**	**J H B**	2.0	0.45	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorooctanoic acid (PFOA)	**3.5**	**H**	2.0	0.74	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorooctane Sulfonate (PFOS)	**3.8**	**H**	2.0	1.3	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluoropentanoic acid (PFPeA)	**1.4**	**J H**	2.0	0.97	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorohexanoic acid (PFHxA)	**1.9**	**J H**	2.0	0.77	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluoroheptanoic acid (PFHpA)	**0.87**	**J H**	2.0	0.79	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorononanoic acid (PFNA)	ND	H	2.0	0.64	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorodecanoic acid (PFDA)	ND	H	2.0	0.43	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluoroundecanoic acid (PFUnA)	ND	H	2.0	0.74	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorododecanoic acid (PFDoA)	ND	H	2.0	0.57	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorotridecanoic Acid (PFTriA)	ND	H	2.0	0.54	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorotetradecanoic acid (PFTeA)	**0.48**	**J H B**	2.0	0.20	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND	H	2.0	0.12	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluoro-n-octadecanoic acid (PFODA)	ND	H	2.0	0.66	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorobutanesulfonic acid (PFBS)	ND	H	2.0	0.90	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorohexanesulfonic acid (PFHxS)	**1.8**	**J H**	2.0	0.86	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND	H	2.0	0.70	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	2.0	1.2	ng/L		11/02/16 18:25	11/08/16 16:02	1
Perfluorooctane Sulfonamide (FOSA)	**1.2**	**J H**	2.0	0.63	ng/L		11/02/16 18:25	11/08/16 16:02	1
6:2FTS	ND	H	20	3.8	ng/L		11/02/16 18:25	11/08/16 16:02	1
8:2FTS	ND	H	20	4.0	ng/L		11/02/16 18:25	11/08/16 16:02	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*112*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C4 PFOA	*112*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C8 FOSA	*10*	*	*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C4 PFBA	*42*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C2 PFHxA	*99*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C5 PFNA	*113*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C2 PFDA	*111*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C2 PFUnA	*99*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C2 PFDoA	*64*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
18O2 PFHxS	*110*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C4-PFHpA	*103*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
13C5-PFPeA	*78*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
M2-6:2FTS	*123*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*
M2-8:2FTS	*119*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:02*	*1*

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Client Sample ID: MW-2-42-47
Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-13
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**1.3**	**J B**	2.0	0.45	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorooctanoic acid (PFOA)	**4.3**		2.0	0.74	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorooctane Sulfonate (PFOS)	**3.1**		2.0	1.3	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.98	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.78	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.79	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.43	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.74	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.54	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorotetradecanoic acid (PFTeA)	**1.3**	**J B**	2.0	0.20	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.66	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.91	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorohexanesulfonic acid (PFHxS)	**0.86**	**J**	2.0	0.86	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.70	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		11/02/16 18:25	11/08/16 16:10	1
Perfluorooctane Sulfonamide (FOSA)	**1.4**	**J**	2.0	0.63	ng/L		11/02/16 18:25	11/08/16 16:10	1
6:2FTS	ND		20	3.8	ng/L		11/02/16 18:25	11/08/16 16:10	1
8:2FTS	ND		20	4.0	ng/L		11/02/16 18:25	11/08/16 16:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*126*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C4 PFOA	*124*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C8 FOSA	*12*	*	*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C4 PFBA	*45*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C2 PFHxA	*118*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C5 PFNA	*116*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C2 PFDA	*115*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C2 PFUnA	*111*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C2 PFDoA	*95*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
18O2 PFHxS	*123*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C4-PFHpA	*121*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
13C5-PFPeA	*94*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
M2-6:2FTS	*150*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*
M2-8:2FTS	*150*		*25 - 150*	*11/02/16 18:25*	*11/08/16 16:10*	*1*

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	13C4 PFOS (25-150)	13C4 PFOA (25-150)	13C8 FOSA (25-150)	13C4 PFBA (25-150)	13C2 PFHx (25-150)	13C5 PFNA (25-150)	13C2 PFDA (25-150)	13C2 PFUnA (25-150)
320-23158-1	MW-3 12-17	103	85	10 *	58	91	87	95	95
320-23158-2	MW-3 22-27	98	73	3 *	28	80	61	58	70
320-23158-3	MW-3 32-37	100	75	2 *	35	88	69	69	78
320-23158-4	MW-3 42-47	99	75	4 *	36	86	69	65	71
320-23158-5	MW-4 16-21	100	59	3 *	51	76	49	46	51
320-23158-6	MW-4 26-31	101	62	6 *	65	84	59	57	67
320-23158-7	MW-4 36-41	103	70	5 *	51	76	75	80	89
320-23158-8	MW-4 46-51	102	78	3 *	55	90	79	77	81
320-23158-9	MW-5 22-27	102	81	5 *	53	96	82	87	94
320-23158-10	MW-2 22-27	104	63	5 *	43	75	56	57	66
320-23158-11	MW-2 22-27 DUP	104	63	8 *	46	77	62	70	80
320-23158-12	MW-2-32-37	112	112	10 *	42	99	113	111	99
320-23158-13	MW-2-42-47	126	124	12 *	45	118	116	115	111
LCS 320-135666/2-A	Lab Control Sample	105	108	22 *	107	100	104	111	108
LCS 320-135789/2-A	Lab Control Sample	103	101	36	108	97	103	112	106
LCSD 320-135666/3-A	Lab Control Sample Dup	102	107	27	110	99	110	116	114
LCSD 320-135789/3-A	Lab Control Sample Dup	109	108	24 *	114	104	109	116	116
MB 320-135666/1-A	Method Blank	100	106	36	105	97	106	110	109
MB 320-135789/1-A	Method Blank	115	112	48	115	102	114	117	119

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	13C2 PFDoA (25-150)	13O2 PFHxS (25-150)	13C4-PFHpA (25-150)	13C5-PFPeA (25-150)	M2-6:2FTS (25-150)	M2-8:2FTS (25-150)		
320-23158-1	MW-3 12-17	99	101	85	87	87	104		
320-23158-2	MW-3 22-27	79	90	80	64	99	115		
320-23158-3	MW-3 32-37	87	92	82	70	93	104		
320-23158-4	MW-3 42-47	83	95	85	74	88	101		
320-23158-5	MW-4 16-21	62	99	71	79	87	102		
320-23158-6	MW-4 26-31	79	99	73	87	95	103		
320-23158-7	MW-4 36-41	94	100	73	74	93	100		
320-23158-8	MW-4 46-51	91	99	84	88	86	101		
320-23158-9	MW-5 22-27	101	100	89	87	91	101		
320-23158-10	MW-2 22-27	76	98	69	70	83	97		
320-23158-11	MW-2 22-27 DUP	87	101	71	74	88	100		
320-23158-12	MW-2-32-37	64	110	103	78	123	119		
320-23158-13	MW-2-42-47	95	123	121	94	150	150		
LCS 320-135666/2-A	Lab Control Sample	109	102	104	103	85	98		
LCS 320-135789/2-A	Lab Control Sample	101	108	96	105	79	98		
LCSD 320-135666/3-A	Lab Control Sample Dup	108	102	103	105	82	107		
LCSD 320-135789/3-A	Lab Control Sample Dup	114	110	103	110	84	105		
MB 320-135666/1-A	Method Blank	102	104	107	102	87	98		
MB 320-135789/1-A	Method Blank	116	116	107	115	82	103		

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

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

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 320-135666/1-A
Matrix: Water
Analysis Batch: 136074

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 135666

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.527	J	2.0	0.46	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorotetradecanoic acid (PFTeA)	0.874	J	2.0	0.20	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorohexanesulfonic acid (PFHxS)	0.981	J	2.0	0.87	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		11/02/16 10:06	11/03/16 20:45	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		11/02/16 10:06	11/03/16 20:45	1
6:2FTS	ND		20	3.8	ng/L		11/02/16 10:06	11/03/16 20:45	1
8:2FTS	ND		20	4.0	ng/L		11/02/16 10:06	11/03/16 20:45	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*100*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C4 PFOA	*106*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C8 FOSA	*36*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C4 PFBA	*105*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C2 PFHxA	*97*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C5 PFNA	*106*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C2 PFDA	*110*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C2 PFUnA	*109*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C2 PFDoA	*102*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
18O2 PFHxS	*104*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C4-PFHpA	*107*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
13C5-PFPeA	*102*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
M2-6:2FTS	*87*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*
M2-8:2FTS	*98*		*25 - 150*	*11/02/16 10:06*	*11/03/16 20:45*	*1*

Lab Sample ID: LCS 320-135666/2-A
Matrix: Water
Analysis Batch: 136074

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	44.4		ng/L		111	74 - 138
Perfluorooctanoic acid (PFOA)	40.0	37.9		ng/L		95	63 - 141

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

Lab Sample ID: LCS 320-135666/2-A
Matrix: Water
Analysis Batch: 136074

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135666

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctane Sulfonate (PFOS)	37.1	36.9		ng/L		99	47 - 162
Perfluoropentanoic acid (PFPeA)	40.0	38.9		ng/L		97	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	41.3		ng/L		103	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	41.5		ng/L		104	63 - 135
Perfluorononanoic acid (PFNA)	40.0	43.2		ng/L		108	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	40.0		ng/L		100	66 - 141
Perfluoroundecanoic acid (PFUnA)	40.0	38.8		ng/L		97	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	41.3		ng/L		103	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	44.9		ng/L		112	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	51.4		ng/L		128	47 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	45.4		ng/L		114	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	49.7		ng/L		124	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	38.4		ng/L		109	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	38.0		ng/L		104	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	39.8		ng/L		105	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	37.2		ng/L		96	35 - 157
Perfluorooctane Sulfonamide (FOSA)	40.0	42.6		ng/L		106	59 - 163
6:2FTS	37.9	44.2		ng/L		116	60 - 140
8:2FTS	38.3	46.4		ng/L		121	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOS	*105*		*25 - 150*
13C4 PFOA	*108*		*25 - 150*
13C8 FOSA	*22*	*	*25 - 150*
13C4 PFBA	*107*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C5 PFNA	*104*		*25 - 150*
13C2 PFDA	*111*		*25 - 150*
13C2 PFUnA	*108*		*25 - 150*
13C2 PFDoA	*109*		*25 - 150*
18O2 PFHxS	*102*		*25 - 150*
13C4-PFHpA	*104*		*25 - 150*
13C5-PFPeA	*103*		*25 - 150*
M2-6:2FTS	*85*		*25 - 150*
M2-8:2FTS	*98*		*25 - 150*

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

Lab Sample ID: LCSD 320-135666/3-A
Matrix: Water
Analysis Batch: 136074

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 135666

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	45.1		ng/L		113	74 - 138	2	30
Perfluorooctanoic acid (PFOA)	40.0	39.5		ng/L		99	63 - 141	4	30
Perfluorooctane Sulfonate (PFOS)	37.1	38.6		ng/L		104	47 - 162	5	30
Perfluoropentanoic acid (PFPeA)	40.0	39.3		ng/L		98	69 - 134	1	30
Perfluorohexanoic acid (PFHxA)	40.0	40.8		ng/L		102	70 - 136	1	30
Perfluoroheptanoic acid (PFHpA)	40.0	41.6		ng/L		104	63 - 135	0	30
Perfluorononanoic acid (PFNA)	40.0	41.7		ng/L		104	71 - 140	4	30
Perfluorodecanoic acid (PFDA)	40.0	40.3		ng/L		101	66 - 141	1	30
Perfluoroundecanoic acid (PFUnA)	40.0	39.0		ng/L		97	68 - 139	0	30
Perfluorododecanoic acid (PFDoA)	40.0	41.0		ng/L		103	71 - 139	1	30
Perfluorotridecanoic Acid (PFTriA)	40.0	48.9		ng/L		122	51 - 139	9	30
Perfluorotetradecanoic acid (PFTeA)	40.0	54.5	*	ng/L		136	47 - 130	6	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	46.1		ng/L		115	50 - 150	1	30
Perfluoro-n-octadecanoic acid (PFODA)	40.0	47.8		ng/L		119	50 - 150	4	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.9		ng/L		110	55 - 147	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	37.8		ng/L		104	58 - 138	0	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	41.2		ng/L		108	32 - 170	3	30
Perfluorodecanesulfonic acid (PFDS)	38.6	38.7		ng/L		100	35 - 157	4	30
Perfluorooctane Sulfonamide (FOSA)	40.0	41.4		ng/L		103	59 - 163	3	30
6:2FTS	37.9	45.7		ng/L		121	60 - 140	4	30
8:2FTS	38.3	47.0		ng/L		123	60 - 140	1	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOS	*102*		*25 - 150*
13C4 PFOA	*107*		*25 - 150*
13C8 FOSA	*27*		*25 - 150*
13C4 PFBA	*110*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C5 PFNA	*110*		*25 - 150*
13C2 PFDA	*116*		*25 - 150*
13C2 PFUnA	*114*		*25 - 150*
13C2 PFDoA	*108*		*25 - 150*
18O2 PFHxS	*102*		*25 - 150*
13C4-PFHpA	*103*		*25 - 150*
13C5-PFPeA	*105*		*25 - 150*
M2-6:2FTS	*82*		*25 - 150*
M2-8:2FTS	*107*		*25 - 150*

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

Lab Sample ID: MB 320-135789/1-A
Matrix: Water
Analysis Batch: 136370

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 135789

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.486	J	2.0	0.46	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorooctane Sulfonate (PFOS)	ND		2.0	1.3	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	0.99	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	0.79	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorodecanoic acid (PFDA)	ND		2.0	0.44	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	0.75	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	0.58	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorotridecanoic Acid (PFTriA)	ND		2.0	0.55	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorotetradecanoic acid (PFTeA)	0.891	J	2.0	0.20	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		2.0	0.12	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		2.0	0.67	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.71	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorodecanesulfonic acid (PFDS)	ND		2.0	1.2	ng/L		11/02/16 17:27	11/04/16 13:56	1
Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.64	ng/L		11/02/16 17:27	11/04/16 13:56	1
6:2FTS	ND		20	3.8	ng/L		11/02/16 17:27	11/04/16 13:56	1
8:2FTS	ND		20	4.0	ng/L		11/02/16 17:27	11/04/16 13:56	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*115*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C4 PFOA	*112*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C8 FOSA	*48*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C4 PFBA	*115*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C2 PFHxA	*102*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C5 PFNA	*114*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C2 PFDA	*117*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C2 PFUnA	*119*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C2 PFDoA	*116*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
18O2 PFHxS	*116*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C4-PFHpA	*107*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
13C5-PFPeA	*115*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
M2-6:2FTS	*82*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*
M2-8:2FTS	*103*		*25 - 150*	*11/02/16 17:27*	*11/04/16 13:56*	*1*

Lab Sample ID: LCS 320-135789/2-A
Matrix: Water
Analysis Batch: 136370

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	40.0	42.7		ng/L		107	74 - 138
Perfluorooctanoic acid (PFOA)	40.0	37.2		ng/L		93	63 - 141

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

Lab Sample ID: LCS 320-135789/2-A
Matrix: Water
Analysis Batch: 136370

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 135789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctane Sulfonate (PFOS)	37.1	37.3		ng/L		101	47 - 162
Perfluoropentanoic acid (PFPeA)	40.0	37.5		ng/L		94	69 - 134
Perfluorohexanoic acid (PFHxA)	40.0	40.1		ng/L		100	70 - 136
Perfluoroheptanoic acid (PFHpA)	40.0	40.6		ng/L		102	63 - 135
Perfluorononanoic acid (PFNA)	40.0	40.8		ng/L		102	71 - 140
Perfluorodecanoic acid (PFDA)	40.0	36.8		ng/L		92	66 - 141
Perfluoroundecanoic acid (PFUnA)	40.0	37.6		ng/L		94	68 - 139
Perfluorododecanoic acid (PFDoA)	40.0	39.3		ng/L		98	71 - 139
Perfluorotridecanoic Acid (PFTriA)	40.0	39.0		ng/L		98	51 - 139
Perfluorotetradecanoic acid (PFTeA)	40.0	44.9		ng/L		112	47 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	40.0	42.3		ng/L		106	50 - 150
Perfluoro-n-octadecanoic acid (PFODA)	40.0	47.0		ng/L		118	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	36.4		ng/L		103	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	36.4	35.8		ng/L		98	58 - 138
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.5		ng/L		106	32 - 170
Perfluorodecanesulfonic acid (PFDS)	38.6	36.5		ng/L		95	35 - 157
Perfluorooctane Sulfonamide (FOSA)	40.0	41.5		ng/L		104	59 - 163
6:2FTS	37.9	38.6		ng/L		102	60 - 140
8:2FTS	38.3	39.5		ng/L		103	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOS	*103*		*25 - 150*
13C4 PFOA	*101*		*25 - 150*
13C8 FOSA	*36*		*25 - 150*
13C4 PFBA	*108*		*25 - 150*
13C2 PFHxA	*97*		*25 - 150*
13C5 PFNA	*103*		*25 - 150*
13C2 PFDA	*112*		*25 - 150*
13C2 PFUnA	*106*		*25 - 150*
13C2 PFDoA	*101*		*25 - 150*
18O2 PFHxS	*108*		*25 - 150*
13C4-PFHpA	*96*		*25 - 150*
13C5-PFPeA	*105*		*25 - 150*
M2-6:2FTS	*79*		*25 - 150*
M2-8:2FTS	*98*		*25 - 150*

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

Lab Sample ID: LCSD 320-135789/3-A
Matrix: Water
Analysis Batch: 136370

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 135789

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			40.0	41.8		ng/L		104	74 - 138	2	30
Perfluorooctanoic acid (PFOA)			40.0	34.7		ng/L		87	63 - 141	7	30
Perfluorooctane Sulfonate (PFOS)			37.1	34.5		ng/L		93	47 - 162	8	30
Perfluoropentanoic acid (PFPeA)			40.0	35.6		ng/L		89	69 - 134	5	30
Perfluorohexanoic acid (PFHxA)			40.0	37.8		ng/L		94	70 - 136	6	30
Perfluoroheptanoic acid (PFHpA)			40.0	38.1		ng/L		95	63 - 135	6	30
Perfluorononanoic acid (PFNA)			40.0	39.2		ng/L		98	71 - 140	4	30
Perfluorodecanoic acid (PFDA)			40.0	36.0		ng/L		90	66 - 141	2	30
Perfluoroundecanoic acid (PFUnA)			40.0	36.0		ng/L		90	68 - 139	5	30
Perfluorododecanoic acid (PFDoA)			40.0	37.0		ng/L		93	71 - 139	6	30
Perfluorotridecanoic Acid (PFTriA)			40.0	37.8		ng/L		94	51 - 139	3	30
Perfluorotetradecanoic acid (PFTeA)			40.0	43.0		ng/L		107	47 - 130	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)			40.0	38.3		ng/L		96	50 - 150	10	30
Perfluoro-n-octadecanoic acid (PFODA)			40.0	43.1		ng/L		108	50 - 150	9	30
Perfluorobutanesulfonic acid (PFBS)			35.4	34.8		ng/L		98	55 - 147	5	30
Perfluorohexanesulfonic acid (PFHxS)			36.4	33.8		ng/L		93	58 - 138	10	30
Perfluoroheptanesulfonic Acid (PFHpS)			38.1	38.1		ng/L		100	32 - 170	6	30
Perfluorodecanesulfonic acid (PFDS)			38.6	34.4		ng/L		89	35 - 157	6	30
Perfluorooctane Sulfonamide (FOSA)			40.0	38.8		ng/L		97	59 - 163	7	30
6:2FTS			37.9	40.3		ng/L		106	60 - 140	4	30
8:2FTS			38.3	39.6		ng/L		103	60 - 140	0	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOS	*109*		*25 - 150*
13C4 PFOA	*108*		*25 - 150*
13C8 FOSA	*24*	*	*25 - 150*
13C4 PFBA	*114*		*25 - 150*
13C2 PFHxA	*104*		*25 - 150*
13C5 PFNA	*109*		*25 - 150*
13C2 PFDA	*116*		*25 - 150*
13C2 PFUnA	*116*		*25 - 150*
13C2 PFDoA	*114*		*25 - 150*
18O2 PFHxS	*110*		*25 - 150*
13C4-PFHpA	*103*		*25 - 150*
13C5-PFPeA	*110*		*25 - 150*
M2-6:2FTS	*84*		*25 - 150*
M2-8:2FTS	*105*		*25 - 150*

LCMS

Prep Batch: 135666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23158-1	MW-3 12-17	Total/NA	Water	3535	
320-23158-2	MW-3 22-27	Total/NA	Water	3535	
320-23158-3	MW-3 32-37	Total/NA	Water	3535	
320-23158-4	MW-3 42-47	Total/NA	Water	3535	
320-23158-5	MW-4 16-21	Total/NA	Water	3535	
320-23158-6	MW-4 26-31	Total/NA	Water	3535	
320-23158-7	MW-4 36-41	Total/NA	Water	3535	
320-23158-8	MW-4 46-51	Total/NA	Water	3535	
320-23158-9	MW-5 22-27	Total/NA	Water	3535	
320-23158-10	MW-2 22-27	Total/NA	Water	3535	
320-23158-11	MW-2 22-27 DUP	Total/NA	Water	3535	
MB 320-135666/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-135666/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-135666/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Prep Batch: 135789

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23158-12	MW-2-32-37	Total/NA	Water	3535	
320-23158-13	MW-2-42-47	Total/NA	Water	3535	
MB 320-135789/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-135789/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-135789/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 136074

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23158-1	MW-3 12-17	Total/NA	Water	537 (modified)	135666
320-23158-2	MW-3 22-27	Total/NA	Water	537 (modified)	135666
320-23158-3	MW-3 32-37	Total/NA	Water	537 (modified)	135666
320-23158-4	MW-3 42-47	Total/NA	Water	537 (modified)	135666
320-23158-5	MW-4 16-21	Total/NA	Water	537 (modified)	135666
320-23158-6	MW-4 26-31	Total/NA	Water	537 (modified)	135666
320-23158-7	MW-4 36-41	Total/NA	Water	537 (modified)	135666
320-23158-8	MW-4 46-51	Total/NA	Water	537 (modified)	135666
320-23158-9	MW-5 22-27	Total/NA	Water	537 (modified)	135666
320-23158-10	MW-2 22-27	Total/NA	Water	537 (modified)	135666
320-23158-11	MW-2 22-27 DUP	Total/NA	Water	537 (modified)	135666
MB 320-135666/1-A	Method Blank	Total/NA	Water	537 (modified)	135666
LCS 320-135666/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	135666
LCSD 320-135666/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	135666

Analysis Batch: 136370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-135789/1-A	Method Blank	Total/NA	Water	537 (modified)	135789
LCS 320-135789/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	135789
LCSD 320-135789/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	135789

Analysis Batch: 136851

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23158-12	MW-2-32-37	Total/NA	Water	537 (modified)	135789
320-23158-13	MW-2-42-47	Total/NA	Water	537 (modified)	135789

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Client Sample ID: MW-3 12-17

Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-1

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			264.8 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 21:08	SBC	TAL SAC

Client Sample ID: MW-3 22-27

Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-2

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			239.2 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 21:15	SBC	TAL SAC

Client Sample ID: MW-3 32-37

Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-3

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			241.1 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 21:53	SBC	TAL SAC

Client Sample ID: MW-3 42-47

Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-4

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			266.5 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 22:00	SBC	TAL SAC

Client Sample ID: MW-4 16-21

Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-5

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			269.4 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 22:08	SBC	TAL SAC

Client Sample ID: MW-4 26-31

Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-6

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			267.3 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 22:15	SBC	TAL SAC

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Client Sample ID: MW-4 36-41

Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-7

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			268.5 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 22:23	SBC	TAL SAC

Client Sample ID: MW-4 46-51

Date Collected: 10/24/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-8

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			262.7 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 22:30	SBC	TAL SAC

Client Sample ID: MW-5 22-27

Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-9

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			262 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 22:38	SBC	TAL SAC

Client Sample ID: MW-2 22-27

Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-10

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			267.2 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 22:45	SBC	TAL SAC

Client Sample ID: MW-2 22-27 DUP

Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-11

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			264.2 mL	0.5 mL	135666	11/02/16 10:06	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			136074	11/03/16 22:53	SBC	TAL SAC

Client Sample ID: MW-2-32-37

Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-12

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			254.3 mL	0.5 mL	135789	11/02/16 18:25	VPM	TAL SAC
Total/NA	Analysis	537 (modified)		1			136851	11/08/16 16:02	SBC	TAL SAC

Lab Chronicle

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

Client Sample ID: MW-2-42-47
Date Collected: 10/25/16 00:00
Date Received: 11/01/16 09:55

Lab Sample ID: 320-23158-13
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			253 mL	0.5 mL	135789	11/02/16 18:25	VPM	TAL SAC
Total/NA	Analysis	537 (modified)		1			136851	11/08/16 16:10	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 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

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 - Colbath Rd-F-41

TestAmerica Job ID: 320-23158-1

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.

Laboratory Services Section

Analysis Request Sheet

Lab Work Order Number	Project Name	Matrix
	6 COLBATH RD / F-41 PFC Contamination	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000153	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	457189	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-3 12-17	10-24-16			
2		MW-3 22-27				
3		MW-3 32-37				
4		MW-3 42-47				
5		MW-4 16-21				
6		MW-4 26-31				
7		MW-4 36-41				
8		MW-4 46-51	10-24-16			
9		MW-5 22-27	10-25-16			
10		MW-2 22-27	10-25-16			

FOR PFC ANAL.

320-23158 Chain of Custody

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	
OpMemo2 - Total	
OpMemo2 - Dissolved	
(Sb,As,Ba,Be,Cd,Cr,Cu,Co,Fe,Pb,Mn,Hg,Mo,Ni,Se,Ag,Ti,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.: Jeff Pincumbe - MDEQ	Joshua Pung MDEQ	10/28/16 1149
Signature:		
Print Name & Org.: Joshua Pung MDEQ	Ryan Close / TAL	10/31/16 1357
Signature:		
Print Name & Org.: Ryan Close	Wesley Shockley TAMS	10/31/16 15:00
Signature:	11/1/16 0985	

MW-2-22-27 DUP
REC'D MW-2-32-37 & MW-2-42-47

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

320-23158 Field Sheet

Ji

Tracking #: 6289 0767 6476

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:

MW2 - 32-37

?

MW2 - 42-47

received, but NOT on CoC

-WSI 11/1/16

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

Cooler Custody Seal: 796480

Sample Custody Seal: ———

Temp: Observed 3.3

Corrected: 2.4

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: WSI 11/1/16

Login Sample Receipt Checklist

Client: Michigan Dept. of Environmental Quality

Job Number: 320-23158-1

Login Number: 23158
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.	False	no times on coc or bottles
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Received extra samples not listed on COC.
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: 320-23601-1
Client Project/Site: Wurtsmith - 3500058-Colbath Road F41
PCE

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

Attn: Bob Delaney

Authorized for release by:
12/15/2016 7:32:10 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-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

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: 320-23601-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: Michigan Dept. of Environmental Quality

Project: Wurtsmith - 3500058-Colbath Road F41 PCE

Report Number: 320-23601-1

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.

The following sample(s) was received at the laboratory without a sample collection time documented on the chain of custody:

Samples 1 & 4 received with no collection time listed on the CoC. Logged to times on containers.
Sample 2, 3, and 5 received without collection times on either the containers or the CoC.

PERFLUORINATED HYDROCARBONS

Job ID: 320-23601-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

Samples MW-1 (320-23601-1), MW-2 (320-23601-2), MW-3 (320-23601-3), MW-5 (320-23601-4) and MW-1 DUP (320-23601-5) 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 (320-23601-1), MW-2 (320-23601-2), MW-3 (320-23601-3), MW-5 (320-23601-4), MW-1 DUP (320-23601-5), (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-2 (320-23601-2). 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-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

Client Sample ID: MW-1 — Lab Sample ID: 320-23601-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.92	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

Client Sample ID: MW-2 — Lab Sample ID: 320-23601-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	3.2		1.9	0.44	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	13		1.9	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	18		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	4.9		1.9	0.95	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	7.2		1.9	0.75	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.0		1.9	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorotridecanoic Acid (PFTriA)	0.93	J	1.9	0.53	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.9	B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.85	J	1.9	0.12	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.3		1.9	0.88	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11		1.9	0.83	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-3 — Lab Sample ID: 320-23601-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotetradecanoic acid (PFTeA)	0.50	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	1.0	J	1.9	0.60	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-5 — Lab Sample ID: 320-23601-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorotridecanoic Acid (PFTriA)	0.56	J	1.9	0.51	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	1.2	J B	1.9	0.18	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.66	J	1.9	0.11	ng/L	1		537 (modified)	Total/NA

Client Sample ID: MW-1 DUP — Lab Sample ID: 320-23601-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	1.1	J	1.9	0.71	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	5.1		1.9	1.2	ng/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.63	J B	1.9	0.19	ng/L	1		537 (modified)	Total/NA
Perfluoro-n-hexadecanoic acid (PFHxDA)	0.16	J	1.9	0.12	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-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

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-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23601-1	MW-1	Water	11/14/16 13:47	11/17/16 09:30
320-23601-2	MW-2	Water	11/14/16 00:00	11/17/16 09:30
320-23601-3	MW-3	Water	11/14/16 00:00	11/17/16 09:30
320-23601-4	MW-5	Water	11/14/16 15:49	11/17/16 09:30
320-23601-5	MW-1 DUP	Water	11/14/16 00:00	11/17/16 09:30

Client Sample ID: MW-1
Date Collected: 11/14/16 13:47
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-1
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.9	0.44	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.72	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.96	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.76	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.77	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.53	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorotetradecanoic acid (PFTeA)	**0.92**	**J B**	1.9	0.19	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.12**	**J**	1.9	0.12	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.65	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.89	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.84	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.69	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 02:25	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.62	ng/L		11/22/16 11:47	12/08/16 02:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*130*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C4 PFOA	*102*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C8 FOSA	*4*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C4 PFBA	*38*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C2 PFHxA	*103*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C5 PFNA	*89*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C2 PFDA	*88*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C2 PFUnA	*102*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C2 PFDoA	*107*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
18O2 PFHxS	*122*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C4-PFHpA	*110*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*
13C5-PFPeA	*83*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:25*	*1*

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

Client Sample ID: MW-2
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-2
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**3.2**		1.9	0.44	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorooctanoic acid (PFOA)	**13**		1.9	0.72	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorooctane Sulfonate (PFOS)	**18**		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluoropentanoic acid (PFPeA)	**4.9**		1.9	0.95	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorohexanoic acid (PFHxA)	**7.2**		1.9	0.75	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluoroheptanoic acid (PFHpA)	**3.0**		1.9	0.77	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.63	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.72	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.56	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorotridecanoic Acid (PFTriA)	**0.93**	**J**	1.9	0.53	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorotetradecanoic acid (PFTeA)	**1.9**	**B**	1.9	0.19	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.85**	**J**	1.9	0.12	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorobutanesulfonic acid (PFBS)	**2.3**		1.9	0.88	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorohexanesulfonic acid (PFHxS)	**11**		1.9	0.83	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.68	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 02:33	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.61	ng/L		11/22/16 11:47	12/08/16 02:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*128*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C4 PFOA	*110*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C8 FOSA	*3*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C4 PFBA	*31*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C2 PFHxA	*105*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C5 PFNA	*107*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C2 PFDA	*81*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C2 PFUnA	*72*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C2 PFDoA	*71*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
18O2 PFHxS	*127*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C4-PFHpA	*125*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*
13C5-PFPeA	*76*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:33*	*1*

Client Sample ID: MW-3
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-3
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.9	0.43	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.71	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.94	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.74	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.42	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorotetradecanoic acid (PFTeA)	**0.50**	**J B**	1.9	0.19	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	ND		1.9	0.12	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.64	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.87	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.82	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/22/16 11:47	12/08/16 02:40	1
Perfluorooctane Sulfonamide (FOSA)	**1.0**	**J**	1.9	0.60	ng/L		11/22/16 11:47	12/08/16 02:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*125*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C4 PFOA	*116*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C8 FOSA	*9*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C4 PFBA	*54*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C2 PFHxA	*115*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C5 PFNA	*119*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C2 PFDA	*113*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C2 PFUnA	*114*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C2 PFDoA	*113*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
18O2 PFHxS	*125*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C4-PFHpA	*126*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*
13C5-PFPeA	*96*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:40*	*1*

Client Sample ID: MW-5
Date Collected: 11/14/16 15:49
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-4
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.9	0.42	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorooctanoic acid (PFOA)	ND		1.9	0.69	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorooctane Sulfonate (PFOS)	ND		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.92	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.73	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.74	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.61	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.69	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.54	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorotridecanoic Acid (PFTriA)	**0.56**	**J**	1.9	0.51	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorotetradecanoic acid (PFTeA)	**1.2**	**J B**	1.9	0.18	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.66**	**J**	1.9	0.11	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.62	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.85	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.80	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.66	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/22/16 11:47	12/08/16 02:48	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.59	ng/L		11/22/16 11:47	12/08/16 02:48	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*115*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C4 PFOA	*84*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C8 FOSA	*2*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C4 PFBA	*52*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C2 PFHxA	*98*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C5 PFNA	*69*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C2 PFDA	*64*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C2 PFUnA	*70*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C2 PFDoA	*79*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
18O2 PFHxS	*120*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C4-PFHpA	*102*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*
13C5-PFPeA	*89*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:48*	*1*

Client Sample ID: MW-1 DUP
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-5
Matrix: Water

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.9	0.43	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorooctanoic acid (PFOA)	**1.1**	**J**	1.9	0.71	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorooctane Sulfonate (PFOS)	**5.1**		1.9	1.2	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluoropentanoic acid (PFPeA)	ND		1.9	0.93	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorohexanoic acid (PFHxA)	ND		1.9	0.74	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.76	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorononanoic acid (PFNA)	ND		1.9	0.62	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorodecanoic acid (PFDA)	ND		1.9	0.41	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluoroundecanoic acid (PFUnA)	ND		1.9	0.71	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorododecanoic acid (PFDoA)	ND		1.9	0.55	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorotridecanoic Acid (PFTriA)	ND		1.9	0.52	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorotetradecanoic acid (PFTeA)	**0.63**	**J B**	1.9	0.19	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluoro-n-hexadecanoic acid (PFHxDA)	**0.16**	**J**	1.9	0.12	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluoro-n-octadecanoic acid (PFODA)	ND		1.9	0.63	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.87	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.82	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.67	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.9	1.1	ng/L		11/22/16 11:47	12/08/16 02:55	1
Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.60	ng/L		11/22/16 11:47	12/08/16 02:55	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOS	*123*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C4 PFOA	*100*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C8 FOSA	*5*	*	*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C4 PFBA	*37*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C2 PFHxA	*102*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C5 PFNA	*88*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C2 PFDA	*79*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C2 PFUnA	*92*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C2 PFDoA	*100*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
18O2 PFHxS	*121*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C4-PFHpA	*115*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*
13C5-PFPeA	*83*		*25 - 150*	*11/22/16 11:47*	*12/08/16 02:55*	*1*

Isotope Dilution Summary

Client: Michigan Dept. of Environmental Quality
Project/Site: Wurtsmith - 3500058-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

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 PFHxA (25-150)	3C5 PFNA (25-150)	3C2 PFDA (25-150)	3C2 PFUnA (25-150)
320-23601-1	MW-1	130	102	4 *	38	103	89	88	102
320-23601-2	MW-2	128	110	3 *	31	105	107	81	72
320-23601-3	MW-3	125	116	9 *	54	115	119	113	114
320-23601-4	MW-5	115	84	2 *	52	98	69	64	70
320-23601-5	MW-1 DUP	123	100	5 *	37	102	88	79	92
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)		
320-23601-1	MW-1	107	122	110	83				
320-23601-2	MW-2	71	127	125	76				
320-23601-3	MW-3	113	125	126	96				
320-23601-4	MW-5	79	120	102	89				
320-23601-5	MW-1 DUP	100	121	115	83				
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-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

LCMS

Prep Batch: 139078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23601-1	MW-1	Total/NA	Water	3535	
320-23601-2	MW-2	Total/NA	Water	3535	
320-23601-3	MW-3	Total/NA	Water	3535	
320-23601-4	MW-5	Total/NA	Water	3535	
320-23601-5	MW-1 DUP	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
320-23601-1	MW-1	Total/NA	Water	537 (modified)	139078
320-23601-2	MW-2	Total/NA	Water	537 (modified)	139078
320-23601-3	MW-3	Total/NA	Water	537 (modified)	139078
320-23601-4	MW-5	Total/NA	Water	537 (modified)	139078
320-23601-5	MW-1 DUP	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-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

Client Sample ID: MW-1
Date Collected: 11/14/16 13:47
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-1
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			258.9 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 02:25	SBC	TAL SAC

Client Sample ID: MW-2
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-2
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			260.8 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 02:33	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: 320-23601-3
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			264.2 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 02:40	SBC	TAL SAC

Client Sample ID: MW-5
Date Collected: 11/14/16 15:49
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-4
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			270.2 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 02:48	SBC	TAL SAC

Client Sample ID: MW-1 DUP
Date Collected: 11/14/16 00:00
Date Received: 11/17/16 09:30

Lab Sample ID: 320-23601-5
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			265.1 mL	0.5 mL	139078	11/22/16 11:47	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1			141271	12/08/16 02:55	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-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

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-Colbath Road F41 PCE

TestAmerica Job ID: 320-23601-1

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
	Colbath Road / F-41 PCE	WATER

Site Code/Project Number	AY	CC Email 1	Project TAT Days	Sample Collector
35000153	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	457189	TEST AMERICA		
State Project Manager Phone	**Phase**	**Overflow Lab Choice 2**		**Primary Contact Phone**
989-894-6255	00			

320-23601 Chain of Custody

	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	11-14-16			PFC
4		MW 5	11-14-16			
5		MW-1 Dup	11-14-16			
6						
7						
8						
9						
10						

Michigan

190

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 ME

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 - Ti 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

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:			11/15/16 1403
Print Name & Org.		Kevin Mercier TRC	
Signature:			11/16/16 1120
Print Name & Org.		Brian Hussong TAS	11/17/16 0940
Signature:			

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

320-23601 Field Sheet

Job: 23601

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-1 : 1347
MW-5 : 1549
No times on other bottles.
CMR 11/17/16

MW-1.
CMR 11/17/16

Samples not frozen CMR 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

Login Sample Receipt Checklist

Client: Michigan Dept. of Environmental Quality

Job Number: 320-23601-1

Login Number: 23601

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.	True	
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	