**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 Section
Remediation and Redevelopment Division

DATE: October 29, 2018

SUBJECT: Colbath Road PFC Contamination, Iosco County, Site ID #35000153
Sampling Data Package-September 2018, GSS Job #680

This data package is for Part 201 work requested by the Department of Environmental Quality (DEQ), Remediation and Redevelopment Division's (RRD's), Saginaw Bay District office for the subject site located in Iosco County, Michigan (Fig 1). RRD's Geological Services Section (GSS) collected groundwater samples from 6 monitor wells on September 25, 2018. GSS received the final laboratory results on October 18, 2018.

The data package includes the following:

- Site Location Map (Fig 1)
- Monitor Well Location Map (Fig 2)
- Groundwater Contour Map (Fig 3)
- Sampling Field Data (Table 1)
- Laboratory Tables with Comparison to Action Levels (Table 2)
- Elevation Data (Table 3)
- VISTA Laboratory Reports (Appendix A)

On September 25, 2018 GSS collected groundwater samples from 6 monitor wells at the site using a low flow method (Fig 2) (Table 1). The groundwater samples were submitted to VISTA Analytical Laboratory and analyzed for Perfluorinated Hydrocarbons (PFCs) (Table 2) (Appendix A).

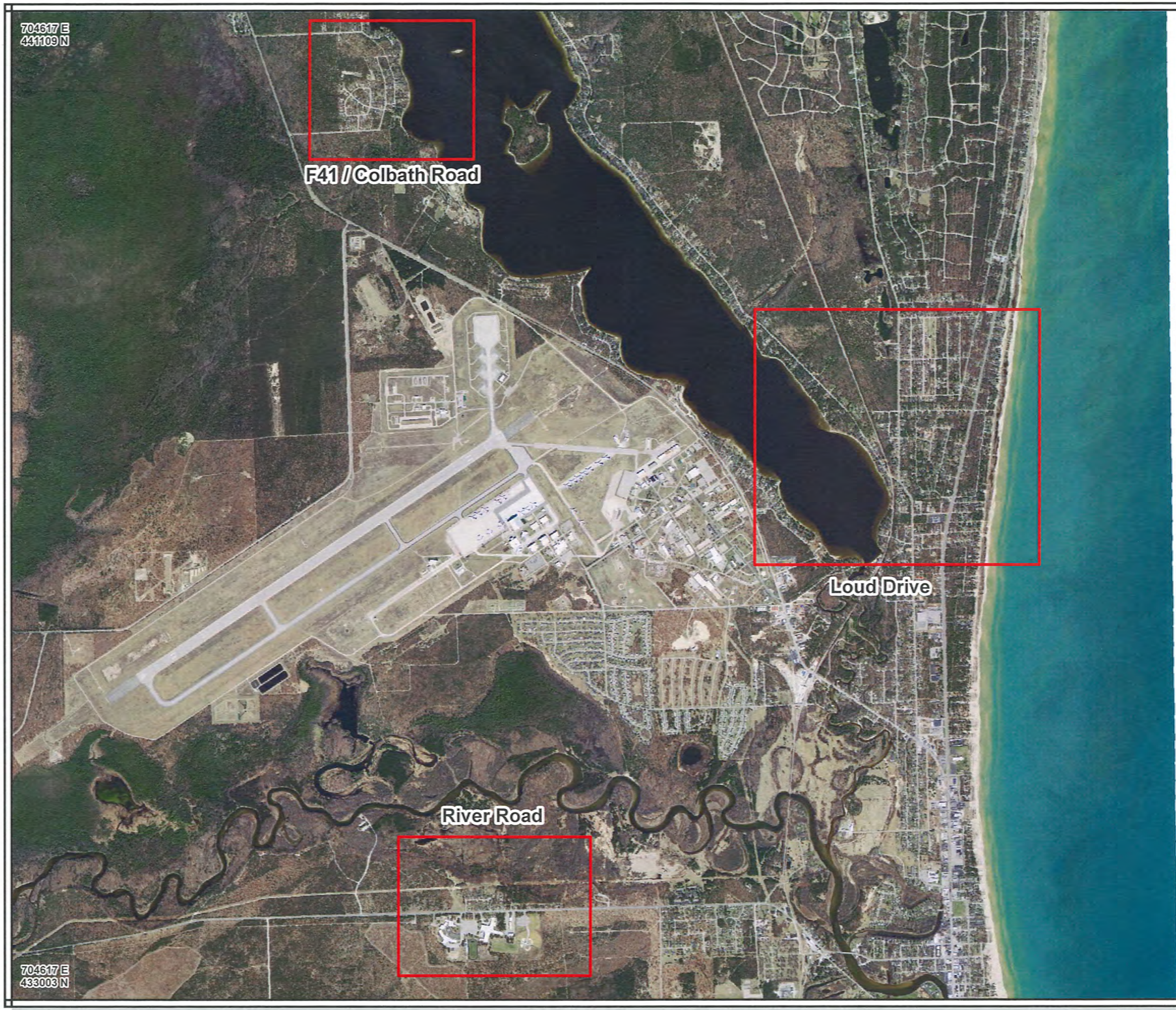
The GSS measured static water levels at the time of sampling and converted to a top of groundwater elevation (Table 3). Staff used the top of groundwater elevations to create a Groundwater Contour Map (Fig 3) which indicates a groundwater flow direction to the north-northwest.

Laboratory analyses detected PFCs in the groundwater samples collected from CR-MW-2 and CR-MW-6. The concentration of PFCs in the sample from CR-MW-2 was 46.86 ng/L and the concentration in the sample from CR-MW-6 was 2.18 ng/L. Both concentrations are below the PFC Action Level of 70 ng/L.

If you have any questions, contact me at 517-243-3171.

Attachments

cc: Burrell P. Shirey, DEQ




## LEGEND

- 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

0 180 360 720 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<br>Geological Services Unit | DEQ | October 2018 |
| Remediation and Redevelopment Division | | FIGURE 1 |


## LEGEND

Monitor Well / Soil Boring

- 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 - Alexander Road**
**ERNIE ID 35000153**
OSCODA TOWNSHIP, IOSCO COUNTY
T24NS R9E SECTIONS 7 & 18

**SITE MAP**

| GEOLOGIST | | CREATION DATE |
|---|---|---|
| Jeff Pincumbe<br>Geological Services Unit | | October 2018 |
| Remediation and Redevelopment Division | DEQ | FIGURE 2 |


## LEGEND

- Monitor Well / Soil Boring
- September 2018 GW contour

- 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 - Alexander Road**
**ERNIE ID 35000153**
OSCODA TOWNSHIP, IOSCO COUNTY
T24NS R9E SECTIONS 7 & 18

**Groundwater Contour Map**
**September 25, 2018**

| GEOLOGIST | | CREATION DATE |
|---|---|---|
| Jeff Pincumbe<br>Geological Services Unit | DEQ | October 2018 |
| Remediation and Redevelopment Division | | FIGURE 3 |

Sampling Field Data
*(September 25, 2018)*

Colbath Road PFC Contamination,
Iosco County



(last 5 readings before sampling)

| WELL | SCREEN INTERVAL | DATE | TIME | BEGINNING STATIC | FINAL STATIC | pH ± 0.1 | | | | | CONDUCTIVITY 3% | | | | | Percent Dissolved Oxygen 10% | | | | | TURBIDITY 10% | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ft | | | ft | ft | | | | | | mS/cm | | | | | % | | | | | NTU | | | | |
| CR-MW-1 | 17.50 | 9/25/2018 | 10:47 | 17.15 | 19.50 | 7.36 | 7.07 | 6.85 | 6.87 | 6.81 | 0.159 | 0.136 | 0.135 | 0.138 | 0.128 | 41.1 | 43.3 | 40.8 | 39.2 | 41.4 | 7.36 | 4.18 | 16 | 17 | 16.8 |
| CR-MW-2 | 25.00 | 9/25/2018 | 15:55 | 16.58 | 16.72 | 8.14 | 8.25 | 8.25 | 8.26 | 8.23 | 0.239 | 0.238 | 0.236 | 0.233 | 0.231 | 8.1 | 8.3 | 8.3 | 8.3 | 8.2 | 3.31 | 3.48 | 3.08 | 3.61 | 5.94 |
| CR-MW-3 | 19.00 | 9/25/2018 | 12:30 | 11.10 | 11.10 | 8.74 | 8.73 | 8.69 | 8.65 | | 0.101 | 0.101 | 0.100 | 0.096 | | 72.1 | 71.0 | 69.5 | 68.5 | | 6.78 | 2.69 | 2.29 | 1.42 | |
| CR-MW-5 | 24.50 | 9/25/2018 | 11:00 | 18.22 | 18.34 | 8.09 | 8.19 | 8.26 | 8.30 | 8.29 | 0.164 | 0.159 | 0.156 | 0.157 | 0.158 | 90.7 | 91.2 | 91.2 | 90.5 | 91.9 | 5.22 | 2.54 | 2.24 | 1.32 | 1.73 |
| CR-MW-6 | 25.50 | 9/25/2018 | 11:45 | 18.51 | 19.20 | 7.76 | 7.76 | 7.76 | 7.75 | 7.74 | 0.329 | 0.329 | 0.326 | 0.326 | 0.336 | 28.9 | 28.4 | 30.2 | 33.0 | 34.9 | 5.58 | 8.71 | 3.58 | 3.31 | 7.44 |
| CR-MW-7 | 16.00 | 9/25/2018 | 10:30 | NA | NA | 8.43 | 8.41 | 8.39 | 8.41 | | 0.079 | 0.076 | 0.076 | 0.076 | | 77.7 | 77.1 | 76.5 | 76.4 | | 22.5 | 34.7 | 34.7 | 30.2 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

VISTA Analytical Laboratory Report

Table #2
(Page 1 of 1)

VISTA Work Order No. 1803162
Report Date: 9/18/18
Client: MDEQ-RRD-SAGINAW BAY
Attention: Mike Jury
Project Name: Colbath Road PVC Contamination
Location Code: 6B22

| Location | | CR-MW-1 | CR-MW-1 Dup | CR-MW-2 | CR-MW-3 | CR-MW-5 | CR-MW-6 | CR-MW-7 |
|---|---|---|---|---|---|---|---|---|
| Depth | | | | | | | | |
| Date | | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/25/2018 | 9/25/2018 |
| | Action Level | | | | | | | |
| Perfluorooctanoic Acid (PFOA) | 70 ng/l | ND | ND | **4.06** | ND | ND | ND | ND |
| Perfluorooctane Sulfonate (PFOS) | 70 ng/l | ND | ND | **42.8** | ND | ND | **2.18** | ND |
| | | | | | | | | |
| Total PFOA and PFOS | 70 ng/l | ND | ND | **46.86** | ND | ND | **2.18** | ND |

ND = Not Detected

| Monitor Wells | Top of Casing (TOC) Elevation | Ground Elevation | Total Depth from TOC | Total Depth from Ground | Static Water Level (TOC) 9/25/18 | Groundwater Elevation 9/25/18 |
|---|---|---|---|---|---|---|
| CB-MW-1 | 617.62 | 614.90 | 20.30 | 17.58 | 17.15 | 600.47 |
| CB-MW-2 | 613.34 | 613.47 | 24.85 | 24.98 | 16.58 | 596.76 |
| CB-MW-3 | 610.25 | 610.28 | 19.15 | 19.18 | 11.10 | 599.15 |
| CB-MW-4 | NA | 606.45 | NA | | | |
| CB-MW-5 | 613.04 | 613.47 | 23.90 | 24.33 | 18.22 | 594.82 |
| CB-MW-6 | 613.16 | 613.44 | 25.00 | 25.28 | 18.51 | 594.65 |
| CB-MW-7 | 615.66 | 613.44 | 18.00 | 15.78 | NA | NA |
| CB-B-1 | NA | 613.94 | NA | | | |

NA = Not Available

# APPENDIX A

Colbath Road PFC Contamination, Iosco County
Site ID #35000153

VISTA Analytical Laboratory Results

October 18, 2018

**Vista Work Order No. 1803162**

Ms. Maya Murshak
Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Dear Ms. Murshak,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on September 27, 2018 under your Project Name 'F-41 Colbath Road 35000153'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier
Laboratory Director

**Vista Work Order No. 1803162**
**Case Narrative**

**Sample Condition on Receipt:**

Seven water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. The client was notified of the sample ID discrepancy.

**Analytical Notes:**

**PFAS Isotope Dilution Method**

Sample "DEQ-CR-MW-2" contained particulate and was centrifuged prior to extraction.

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method (Modified EPA Method 537). The results for PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Results for all other analytes include the linear isomers only.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with the preparation batch. No analytes were detected in the Method Blank above 1/2 the LOQ. The OPR recoveries were within the method acceptance criteria.

The labeled standard recoveries for all QC and field samples were within the acceptance criteria.

TABLE OF CONTENTS

# Sample Inventory Report

| Vista Sample ID | Client Sample ID | Sampled | Received | Components/Containers |
|---|---|---|---|---|
| 1803162-01 | DEQ-CR-MW-1 | 25-Sep-18 10:47 | 27-Sep-18 11:31 | HDPE Bottle, 250 mL |
| | | | | HDPE Bottle, 250 mL |
| 1803162-02 | DEQ-CR-MW-1 DUP | 25-Sep-18 10:47 | 27-Sep-18 11:31 | HDPE Bottle, 250 mL |
| | | | | HDPE Bottle, 250 mL |
| 1803162-03 | DEQ-CR-MW-2 | 25-Sep-18 12:50 | 27-Sep-18 11:31 | HDPE Bottle, 250 mL |
| | | | | HDPE Bottle, 250 mL |
| 1803162-04 | DEQ-CR-MW-3 | 25-Sep-18 12:29 | 27-Sep-18 11:31 | HDPE Bottle, 250 mL |
| | | | | HDPE Bottle, 250 mL |
| 1803162-05 | DEQ-CR-MW-5 | 25-Sep-18 11:00 | 27-Sep-18 11:31 | HDPE Bottle, 250 mL |
| | | | | HDPE Bottle, 250 mL |
| 1803162-06 | DEQ-CR-MW-6 | 25-Sep-18 11:45 | 27-Sep-18 11:31 | HDPE Bottle, 250 mL |
| | | | | HDPE Bottle, 250 mL |
| 1803162-07 | DEQ-CR-MW-7 | 25-Sep-18 10:28 | 27-Sep-18 11:31 | HDPE Bottle, 250 mL |
| | | | | HDPE Bottle, 250 mL |

**ANALYTICAL RESULTS**

## Sample ID: Method Blank

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Matrix: Aqueous

**Laboratory Data**

Lab Sample: B8I0213-BLK1
Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFPeA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFBS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-4:2 FTS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFHxA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFPeS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFHpA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFHxS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Br-PFHxS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Total PFHxS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-6:2 FTS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFOA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Br-PFOA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Total PFOA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFHpS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFNA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFOSA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFOS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Br-PFOS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Total PFOS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFDA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-8:2FTS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFNS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-MeFOSAA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Br-MeFOSAA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Total MeFOSAA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-EtFOSAA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Br-EtFOSAA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| Total EtFOSAA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFUnA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFDS | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFDoA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFTrDA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| L-PFTeDA | ND | 1.37 | 2.00 | 4.00 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 107 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C3-PFPeA | IS | 103 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C3-PFBS | IS | 114 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |

## Sample ID: Method Blank

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Matrix: Aqueous

**Laboratory Data**

Lab Sample: B8I0213-BLK1
Column: BEH C18

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2 FTS | IS | 137 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C2-PFHxA | IS | 113 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C4-PFHpA | IS | 119 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 18O2-PFHxS | IS | 112 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C2-6:2 FTS | IS | 126 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C2-PFOA | IS | 99.1 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C5-PFNA | IS | 70.0 | 50 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C8-PFOSA | IS | 38.3 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C8-PFOS | IS | 100 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C2-PFDA | IS | 67.5 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C2-8:2 FTS | IS | 109 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| d3-MeFOSAA | IS | 79.0 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| d5-EtFOSAA | IS | 86.3 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C2-PFUnA | IS | 77.0 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C2-PFDoA | IS | 85.4 | 30 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |
| 13C2-PFTeDA | IS | 103 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 03:04 | 1 |

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

**Sample ID: OPR** **PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Matrix: Aqueous

**Laboratory Data**

Lab Sample: B8I0213-BS1
Column: BEH C18

| Analyte | Amt Found (ng/L) | Spike Amt | % Rec | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | 38.0 | 40.0 | 95.1 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFPeA | 39.2 | 40.0 | 98.1 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFBS | 37.4 | 40.0 | 93.5 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-4:2 FTS | 33.0 | 40.0 | 82.6 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFHxA | 36.0 | 40.0 | 89.9 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFPeS | 34.6 | 40.0 | 86.6 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFHpA | 36.0 | 40.0 | 90.1 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| Total PFHxS | 39.1 | 40.0 | 97.8 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-6:2 FTS | 30.7 | 40.0 | 76.8 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| Total PFOA | 33.5 | 40.0 | 83.8 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFHpS | 40.6 | 40.0 | 102 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFNA | 38.3 | 40.0 | 95.8 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFOSA | 37.8 | 40.0 | 94.6 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| Total PFOS | 36.9 | 40.0 | 92.3 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFDA | 34.8 | 40.0 | 86.9 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-8:2FTS | 36.9 | 40.0 | 92.2 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFNS | 38.1 | 40.0 | 95.3 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| Total MeFOSAA | 38.4 | 40.0 | 96.1 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| Total EtFOSAA | 37.1 | 40.0 | 92.7 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFUnA | 37.4 | 40.0 | 93.4 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFDS | 33.7 | 40.0 | 84.1 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFDoA | 38.1 | 40.0 | 95.2 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFTrDA | 34.7 | 40.0 | 86.9 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| L-PFTeDA | 31.0 | 40.0 | 77.6 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |

| Labeled Standards | Type | % Rec | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 101 | 60- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C3-PFPeA | IS | 98.6 | 60- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C3-PFBS | IS | 114 | 60- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-4:2 FTS | IS | 128 | 40- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-PFHxA | IS | 106 | 70- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C4-PFHpA | IS | 115 | 60- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 18O2-PFHxS | IS | 105 | 60- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-6:2 FTS | IS | 124 | 40- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-PFOA | IS | 95.6 | 60- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C5-PFNA | IS | 71.8 | 50- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |

**Sample ID: OPR** **PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Matrix: Aqueous

**Laboratory Data**

Lab Sample: B8I0213-BS1
Column: BEH C18

| Labeled Standards | Type | % Rec | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C8-PFOSA | IS | 41.5 | 20- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C8-PFOS | IS | 94.5 | 60- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-PFDA | IS | 73.2 | 60- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-8:2 FTS | IS | 106 | 40- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| d3-MeFOSAA | IS | 81.3 | 50- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| d5-EtFOSAA | IS | 85.5 | 50- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-PFUnA | IS | 78.3 | 60- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-PFDoA | IS | 82.8 | 30- 130 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |
| 13C2-PFTeDA | IS | 93.8 | 20- 150 | | B8I0213 | 08-Oct-18 | 0.250 L | 17-Oct-18 02:54 | 1 |

## Sample ID: DEQ-CR-MW-1

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 10:47

**Laboratory Data**

Lab Sample: 1803162-01
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFPeA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFBS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-4:2 FTS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFHxA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFPeS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFHpA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFHxS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Br-PFHxS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Total PFHxS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-6:2 FTS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFOA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Br-PFOA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Total PFOA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFHpS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFNA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFOSA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFOS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Br-PFOS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Total PFOS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFDA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-8:2FTS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFNS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-MeFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Br-MeFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Total MeFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-EtFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Br-EtFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| Total EtFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFUnA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFDS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFDoA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFTrDA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| L-PFTeDA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 111 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C3-PFPeA | IS | 102 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C3-PFBS | IS | 107 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |

## Sample ID: DEQ-CR-MW-1

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 10:47

**Laboratory Data**

Lab Sample: 1803162-01
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2 FTS | IS | 118 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C2-PFHxA | IS | 109 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C4-PFHpA | IS | 120 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 18O2-PFHxS | IS | 99.2 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C2-6:2 FTS | IS | 111 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C2-PFOA | IS | 109 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C5-PFNA | IS | 84.3 | 50 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C8-PFOSA | IS | 43.7 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C8-PFOS | IS | 103 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C2-PFDA | IS | 69.3 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C2-8:2 FTS | IS | 95.7 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| d3-MeFOSAA | IS | 82.7 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| d5-EtFOSAA | IS | 80.6 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C2-PFUnA | IS | 80.4 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C2-PFDoA | IS | 78.8 | 30 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |
| 13C2-PFTeDA | IS | 116 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:15 | 1 |

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

## Sample ID: DEQ-CR-MW-1 DUP

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 10:47

**Laboratory Data**

Lab Sample: 1803162-02
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFPeA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFBS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-4:2 FTS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFHxA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFPeS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFHpA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFHxS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Br-PFHxS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Total PFHxS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-6:2 FTS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFOA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Br-PFOA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Total PFOA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFHpS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFNA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFOSA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFOS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Br-PFOS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Total PFOS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFDA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-8:2FTS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFNS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-MeFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Br-MeFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Total MeFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-EtFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Br-EtFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| Total EtFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFUnA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFDS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFDoA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFTrDA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| L-PFTeDA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 108 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C3-PFPeA | IS | 100 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C3-PFBS | IS | 111 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |

## Sample ID: DEQ-CR-MW-1 DUP

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road

Matrix: Water
Date Collected: 25-Sep-18 10:47

**Laboratory Data**

Lab Sample: 1803162-02
Date Received: 27-Sep-18 11:31

Column: BEH C18

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2 FTS | IS | 126 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C2-PFHxA | IS | 110 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C4-PFHpA | IS | 123 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 18O2-PFHxS | IS | 109 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C2-6:2 FTS | IS | 118 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C2-PFOA | IS | 102 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C5-PFNA | IS | 80.9 | 50 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C8-PFOSA | IS | 39.9 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C8-PFOS | IS | 103 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C2-PFDA | IS | 72.9 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C2-8:2 FTS | IS | 115 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| d3-MeFOSAA | IS | 77.8 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| d5-EtFOSAA | IS | 81.0 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C2-PFUnA | IS | 79.1 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C2-PFDoA | IS | 78.3 | 30 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |
| 13C2-PFTeDA | IS | 107 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 03:26 | 1 |

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

## Sample ID: DEQ-CR-MW-2

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 12:50

**Laboratory Data**

Lab Sample: 1803162-03
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFPeA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFBS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-4:2 FTS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFHxA | 2.08 | 1.38 | 2.02 | 4.03 | J | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFPeS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFHpA | 1.45 | 1.38 | 2.02 | 4.03 | J | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFHxS | 5.88 | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Br-PFHxS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Total PFHxS | 6.49 | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-6:2 FTS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFOA | 4.01 | 1.38 | 2.02 | 4.03 | J | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Br-PFOA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Total PFOA | 4.06 | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFHpS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFNA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFOSA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFOS | 33.3 | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Br-PFOS | 9.55 | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Total PFOS | 42.8 | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFDA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-8:2FTS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFNS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-MeFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Br-MeFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Total MeFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-EtFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Br-EtFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| Total EtFOSAA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFUnA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFDS | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFDoA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFTrDA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| L-PFTeDA | ND | 1.38 | 2.02 | 4.03 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 108 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C3-PFPeA | IS | 101 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C3-PFBS | IS | 116 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |

## Sample ID: DEQ-CR-MW-2

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 12:50

**Laboratory Data**

Lab Sample: 1803162-03
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2 FTS | IS | 126 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C2-PFHxA | IS | 112 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C4-PFHpA | IS | 123 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 18O2-PFHxS | IS | 107 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C2-6:2 FTS | IS | 138 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C2-PFOA | IS | 105 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C5-PFNA | IS | 84.6 | 50 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C8-PFOSA | IS | 45.4 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C8-PFOS | IS | 105 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C2-PFDA | IS | 77.7 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C2-8:2 FTS | IS | 103 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| d3-MeFOSAA | IS | 95.4 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| d5-EtFOSAA | IS | 89.4 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C2-PFUnA | IS | 79.8 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C2-PFDoA | IS | 82.9 | 30 - 130 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |
| 13C2-PFTeDA | IS | 114 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.248 L | 17-Oct-18 03:36 | 1 |

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

## Sample ID: DEQ-CR-MW-3

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 12:29

**Laboratory Data**

Lab Sample: 1803162-04
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFPeA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFBS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-4:2 FTS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFHxA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFPeS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFHpA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFHxS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Br-PFHxS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Total PFHxS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-6:2 FTS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFOA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Br-PFOA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Total PFOA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFHpS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFNA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFOSA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFOS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Br-PFOS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Total PFOS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFDA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-8:2FTS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFNS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-MeFOSAA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Br-MeFOSAA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Total MeFOSAA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-EtFOSAA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Br-EtFOSAA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| Total EtFOSAA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFUnA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFDS | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFDoA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFTrDA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| L-PFTeDA | ND | 1.39 | 2.02 | 4.05 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 103 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C3-PFPeA | IS | 99.8 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C3-PFBS | IS | 107 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |

## Sample ID: DEQ-CR-MW-3

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road

Matrix: Water
Date Collected: 25-Sep-18 12:29

**Laboratory Data**

Lab Sample: 1803162-04
Date Received: 27-Sep-18 11:31

Column: BEH C18

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2 FTS | IS | 120 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C2-PFHxA | IS | 107 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C4-PFHpA | IS | 121 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 18O2-PFHxS | IS | 104 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C2-6:2 FTS | IS | 120 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C2-PFOA | IS | 103 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C5-PFNA | IS | 76.3 | 50 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C8-PFOSA | IS | 34.8 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C8-PFOS | IS | 102 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C2-PFDA | IS | 65.7 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C2-8:2 FTS | IS | 110 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| d3-MeFOSAA | IS | 76.5 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| d5-EtFOSAA | IS | 71.6 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C2-PFUnA | IS | 65.8 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C2-PFDoA | IS | 74.2 | 30 - 130 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |
| 13C2-PFTeDA | IS | 95.1 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.247 L | 17-Oct-18 03:47 | 1 |

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

## Sample ID: DEQ-CR-MW-5

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 11:00

**Laboratory Data**

Lab Sample: 1803162-05
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFPeA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFBS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-4:2 FTS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFHxA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFPeS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFHpA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFHxS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Br-PFHxS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Total PFHxS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-6:2 FTS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFOA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Br-PFOA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Total PFOA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFHpS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFNA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFOSA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFOS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Br-PFOS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Total PFOS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFDA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-8:2FTS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFNS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-MeFOSAA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Br-MeFOSAA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Total MeFOSAA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-EtFOSAA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Br-EtFOSAA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| Total EtFOSAA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFUnA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFDS | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFDoA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFTrDA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| L-PFTeDA | ND | 1.42 | 2.07 | 4.15 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 106 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C3-PFPeA | IS | 95.4 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C3-PFBS | IS | 111 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |

## Sample ID: DEQ-CR-MW-5

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 11:00

**Laboratory Data**

Lab Sample: 1803162-05
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2 FTS | IS | 124 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C2-PFHxA | IS | 106 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C4-PFHpA | IS | 125 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 18O2-PFHxS | IS | 105 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C2-6:2 FTS | IS | 120 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C2-PFOA | IS | 107 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C5-PFNA | IS | 87.8 | 50 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C8-PFOSA | IS | 40.5 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C8-PFOS | IS | 103 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C2-PFDA | IS | 72.3 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C2-8:2 FTS | IS | 97.5 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| d3-MeFOSAA | IS | 78.6 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| d5-EtFOSAA | IS | 81.0 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C2-PFUnA | IS | 77.0 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C2-PFDoA | IS | 78.9 | 30 - 130 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |
| 13C2-PFTeDA | IS | 96.7 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.241 L | 17-Oct-18 03:57 | 1 |

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

## Sample ID: DEQ-CR-MW-6

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 11:45

**Laboratory Data**

Lab Sample: 1803162-06
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | 1.53 | 1.44 | 2.11 | 4.22 | J | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFPeA | 1.85 | 1.44 | 2.11 | 4.22 | J | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFBS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-4:2 FTS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFHxA | 2.64 | 1.44 | 2.11 | 4.22 | J | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFPeS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFHpA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFHxS | 14.3 | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Br-PFHxS | 1.73 | 1.44 | 2.11 | 4.22 | J | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Total PFHxS | 16.1 | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-6:2 FTS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFOA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Br-PFOA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Total PFOA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFHpS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFNA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFOSA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFOS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Br-PFOS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Total PFOS | 2.18 | 1.44 | 2.11 | 4.22 | J | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFDA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-8:2FTS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFNS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-MeFOSAA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Br-MeFOSAA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Total MeFOSAA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-EtFOSAA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Br-EtFOSAA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| Total EtFOSAA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFUnA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFDS | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFDoA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFTrDA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| L-PFTeDA | ND | 1.44 | 2.11 | 4.22 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 106 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C3-PFPeA | IS | 98.3 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C3-PFBS | IS | 106 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |

## Sample ID: DEQ-CR-MW-6

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road

Matrix: Water
Date Collected: 25-Sep-18 11:45

**Laboratory Data**

Lab Sample: 1803162-06
Date Received: 27-Sep-18 11:31

Column: BEH C18

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2 FTS | IS | 128 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C2-PFHxA | IS | 110 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C4-PFHpA | IS | 122 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 18O2-PFHxS | IS | 111 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C2-6:2 FTS | IS | 119 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C2-PFOA | IS | 104 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C5-PFNA | IS | 82.3 | 50 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C8-PFOSA | IS | 55.8 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C8-PFOS | IS | 102 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C2-PFDA | IS | 79.5 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C2-8:2 FTS | IS | 97.1 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| d3-MeFOSAA | IS | 89.9 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| d5-EtFOSAA | IS | 91.1 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C2-PFUnA | IS | 89.1 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C2-PFDoA | IS | 87.4 | 30 - 130 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |
| 13C2-PFTeDA | IS | 110 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.237 L | 17-Oct-18 04:08 | 1 |

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

## Sample ID: DEQ-CR-MW-7

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 10:28

**Laboratory Data**

Lab Sample: 1803162-07
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Analyte | Conc. (ng/L) | DL | LOD | LOQ | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|---|
| L-PFBA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFPeA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFBS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-4:2 FTS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFHxA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFPeS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFHpA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFHxS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Br-PFHxS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Total PFHxS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-6:2 FTS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFOA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Br-PFOA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Total PFOA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFHpS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFNA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFOSA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFOS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Br-PFOS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Total PFOS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFDA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-8:2FTS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFNS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-MeFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Br-MeFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Total MeFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-EtFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Br-EtFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| Total EtFOSAA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFUnA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFDS | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFDoA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFTrDA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| L-PFTeDA | ND | 1.35 | 1.98 | 3.95 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C3-PFBA | IS | 106 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C3-PFPeA | IS | 99.9 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C3-PFBS | IS | 111 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |

## Sample ID: DEQ-CR-MW-7

**PFAS Isotope Dilution Method**

**Client Data**

Name: Merit Laboratories, Inc.
Project: F-41 Colbath Road 35000153
Location: F-41 Colbath Road
Matrix: Water
Date Collected: 25-Sep-18 10:28

**Laboratory Data**

Lab Sample: 1803162-07
Date Received: 27-Sep-18 11:31
Column: BEH C18

| Labeled Standards | Type | % Recovery | Limits | Qualifiers | Batch | Extracted | Samp Size | Analyzed | Dilution |
|---|---|---|---|---|---|---|---|---|---|
| 13C2-4:2 FTS | IS | 126 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C2-PFHxA | IS | 107 | 70 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C4-PFHpA | IS | 120 | 60 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 18O2-PFHxS | IS | 113 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C2-6:2 FTS | IS | 109 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C2-PFOA | IS | 108 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C5-PFNA | IS | 82.1 | 50 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C8-PFOSA | IS | 35.8 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C8-PFOS | IS | 104 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C2-PFDA | IS | 73.3 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C2-8:2 FTS | IS | 106 | 40 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| d3-MeFOSAA | IS | 79.7 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| d5-EtFOSAA | IS | 81.3 | 50 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C2-PFUnA | IS | 79.2 | 60 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C2-PFDoA | IS | 78.9 | 30 - 130 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |
| 13C2-PFTeDA | IS | 112 | 20 - 150 | | B8I0213 | 08-Oct-18 | 0.253 L | 17-Oct-18 04:18 | 1 |

DL - Detection Limit
LOD - Limit of Detection
LOQ - Limit of quantitation
Results reported to the DL.

# DATA QUALIFIERS & ABBREVIATIONS

| | |
|---|---|
| **B** | **This compound was also detected in the method blank** |
| **Conc.** | **Concentration** |
| **D** | **Dilution** |
| **DL** | **Detection limit** |
| **E** | **The associated compound concentration exceeded the calibration range of the instrument** |
| **H** | **Recovery and/or RPD was outside laboratory acceptance limits** |
| **I** | **Chemical Interference** |
| **J** | **The amount detected is below the Reporting Limit/LOQ** |
| **LOD** | **Limits of Detection** |
| **LOQ** | **Limits of Quantitation** |
| **M** | **Estimated Maximum Possible Concentration (CA Region 2 projects only)** |
| **NA** | **Not applicable** |
| **ND** | **Not Detected** |
| **Q** | **Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)** |
| **TEQ** | **Toxic Equivalency** |
| **U** | **Not Detected (specific projects only)** |
| ***** | **See Cover Letter** |

**Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.**

## CERTIFICATIONS

| Accrediting Authority | Certificate Number |
|---|---|
| Alaska Department of Environmental Conservation | 17-013 |
| Arkansas Department of Environmental Quality | 18-008-0 |
| California Department of Health – ELAP | 2892 |
| DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005 | 3091.01 |
| Florida Department of Health | E87777-18 |
| Hawaii Department of Health | N/A |
| Louisiana Department of Environmental Quality | 01977 |
| Maine Department of Health | 2018017 |
| Minnesota Department of Health | 1322288 |
| New Hampshire Environmental Accreditation Program | 207717 |
| New Jersey Department of Environmental Protection | CA003 |
| New York Department of Health | 11411 |
| Oregon Laboratory Accreditation Program | 4042-009 |
| Pennsylvania Department of Environmental Protection | 014 |
| Texas Commission on Environmental Quality | T104704189-18-8 |
| Virginia Department of General Services | 9077 |
| Washington Department of Ecology | C584 |
| Wisconsin Department of Natural Resources | 998036160 |

*Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.*

## NELAP Accredited Test Methods

| MATRIX: Air | |
|---|---|
| **Description of Test** | **Method** |
| Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans | EPA 23 |

| MATRIX: Biological Tissue | |
|---|---|
| **Description of Test** | **Method** |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613B |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS | EPA 1699 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

| MATRIX: Drinking Water | |
|---|---|
| **Description of Test** | **Method** |
| 2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS | EPA 1613 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |

| MATRIX: Non-Potable Water | |
|---|---|
| **Description of Test** | **Method** |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613B |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS | EPA 1699 |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Dioxin by GC/HRMS | EPA 613 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

| MATRIX: Solids | |
|---|---|
| **Description of Test** | **Method** |
| Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613 |
| Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS | EPA 1613B |
| Brominated Diphenyl Ethers by HRGC/HRMS | EPA 1614A |
| Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS | EPA 1668A/C |
| Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS | EPA 537 |
| Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS | EPA 8280A/B |
| Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS | EPA 8290/8290A |

Michigan Department of Environmental Quality
Laboratory Services Section

# Analysis Request Sheet 1803162

4.0°C

| Lab Work Order Number | Project Name | Matrix |
|---|---|---|
| | F-41 - Colbath Road | WATER |

| Site Code/Project Number | AY | CC Email 1 | Project TAT Days | Sample Collector |
|---|---|---|---|---|
| 35000153 | | pincumbej@michigan.gov | | Jeff Pincumbe |
| **Dept-Division-District** | **Index** | **CC Email 2** | **Project Due Date** | **Sample Collector Phone** |
| DEQ-RRD-Sag-Bay | 6B22 | shireyb@michigan.gov | | 517-243-3171 |
| **State Project Manager** | **PCA** | **CC Email 3** | | **Contract Firm** |
| Mike Jury | | | | |
| **State Project Manager Email** | **Project** | **Overflow Lab Choice 1** | **Accept Analysis hold time codes** | **Contract Firm Primary Contact** |
| jurym1@michigan.gov | | | | |
| **State Project Manager Phone** | **Phase** | **Overflow Lab Choice 2** | | **Primary Contact Phone** |
| 989-894-6255 | | | | |

| | Lab Use Only | Field Sample Identification | Collection Date | Collection Time | Container Count | Comments |
|---|---|---|---|---|---|---|
| 1 | | DEQ - CR - MW-1 | 9-25-18 | 1047 | 2 | |
| 2 | | DEQ - CR - MW-1 DUP | | 1047 | | |
| 3 | | DEQ - CR - MW-2 | | 1250 | | |
| 4 | | DEQ - CR - MW-3 BP | | 1229 | | |
| 5 | | DEQ - CR - MW-5 BP | | 1100 | | |
| 6 | | DEQ - CR - MW-6 | | 1145 | | |
| 7 | | DEQ - CR - MW-7 | | 1028 | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |

PFAS ANALYSIS

**ORGANIC CHEMISTRY**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **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**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 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**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 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**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Lab Filtration | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**MA - TOTAL METALS**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 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**

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

**GENERAL CHEMISTRY**

| | | 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 | B. Benedict VAL | 09/27/18 1151 |
| Signature: | | |
| Print Name & Org: | | |
| Signature: | | |
| Print Name & Org: | | |
| Signature: | | |

Vista Analytical Laboratory

# Sample Log in Checklist

PAGE # 1 of 1
WO# 1803162
SDG# —
TAT Std

## Section 1: Container Receipt

Delivered By: ☐ FedEx ☐ UPS ☐ On Trac ☐ GSO ☐ DHL ☐ Hand Delivered ☐ Other:

| Number of Containers | Arrival Date | Arrival time | Cooler Received LR-SLC Initiated By/Date |
|---|---|---|---|
| 1 | 9/24/18 | 1131 | VBLB 9/27/18 |

## Section 2: Sample Receipt Condition and Initial Storage

| Container Condition | Chain of Custody | Preservation Type | Temperature | Storage Location | Initials/ Date |
|---|---|---|---|---|---|
| ☑ Shipping container intact<br>☒ Shipping seals intact<br>☐ Custody Seals present<br>☐ Custody seals intact | ☑ COC present<br>☒ Multiple COC's: 3<br>☒ "Relinquished By" Section complete | ☒ Ice<br>☐ Blue Ice<br>☐ Dry Ice<br>☐ Other | Thermometer ID: **IR-4**<br>☐ Probe used<br>Temp (uncorrected): 4.1 °C<br>Temp (corrected): 4.0 °C | ☒ WR2<br>☐ WF2<br>☐ NA | VBLB 9/27/18 |

## Section 3: Sample Log In

Airbill/Trk # 1Z 4XX 260 22 1001 5025

| | By/date |
|---|---|
| Shipping container ☐ Vista ☒ Client ☐ Retain ☒ Return ☐ Dispose | |
| Log In Time: 1324 | VBLB 9/27/18 |
| COC clearly identifies:<br>• Sample name *<br>• Sample matrix<br>• Test method<br>• Sample collection date or time<br>• Collector's name<br>• Preservation type | ☐ Acceptable<br>☒ Not acceptable – anomaly form required<br>VBLB 9/27/18 |
| All samples present and accounted for on COC | VBLB 9/27/18 |
| Sample IDs are legible | VBLB 9/27/18 |
| Samples conform to the description on the COC | VBLB 9/27/18 |
| Samples are intact and suitable for testing | VBLB 9/27/18 |
| Preservation documented as required: ☒ NA ☐ $Na_2S_2O_3$ ☐ Trizma ☐ Other _____ | VBLB 9/27/18 |
| Samples stored ☒ WR2 Shelf: A F4/F7 ☐ WF2 Shelf: _____ ☐ R1 Shelf: _____ | VBLB 9/27/18 |

**Comments:** Sample label ID / COC ID

* DEQ-CR-MW1-DUP1 DEQ-CR-MW-1 DUP

VBLB 9/27/18

# Chain of Custody Anomaly/Sample Acceptance Form

Vista Analytical Laboratory

Merit Laboratories, Inc.
Maya Murshak
mayamurshak@meritlabs.com
(517) 827-2744

Workorder Number: 1803162
Date Received: 27-Sep-18 11:31
Documented by/date: B.Benedict 09/27/2018

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis.

Thank you,

Martha Maier
mmaier@vista-analytical.com
916-673-1520

[X] Sample IDs on Chain of Custody do not match Sample Container Labels

| Chain of Custody ID | Container Label ID |
|---|---|
| | |
| DEQ-CR-MW-1 DUP | DEQ-CR-MW-1 **DUP 1** |
| | |
| | |
| | |
| | |
| | |

**Client Authorization**

Proceed with Analysis: (YES) NO Signature and Date [signature] 10/16/18

Client Comments/Instructions Client notified via email on 9/28/18.