

**Report Prepared for:**

Will Cole  
Pace Analytical Grand Rapids  
5560 Corporate Exchange Court  
Grand Rapids MI 49512

**REPORT OF  
LABORATORY  
ANALYSIS  
FOR PFAAs**

**Report Prepared Date:**

March 29, 2018

**Report Information:**

**Pace Project #: 10424502**  
**Sample Receipt Date: 03/22/2018**  
**Client Project #: 469681 Fleis & Vanderbrink**  
**Client Sub PO #: N/A**  
**State Cert #: 9909**

**Invoicing & Reporting Options:**

The report provided has been invoiced as a Level 2 PFAA Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Megan McCabe, your Pace Project Manager.

**This report has been reviewed by:**



March 29, 2018

Megan McCabe, Project Manager  
612-607-6429  
(612) 607-6444 (fax)  
megan.mccabe@pacelabs.com



**Report of Laboratory Analysis**

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The results relate only to the samples included in this report.

## **DISCUSSION**

This report presents the results from the analyses performed on three of six samples and a duplicate sample submitted by a representative of Pace Analytical-Grand Rapids. The samples were analyzed for the presence or absence of twenty-one perfluorinated compounds using a modified version of USEPA Method 537. Reporting limits were set to the quantitation limits. The field blanks were not provided with this sample set since the analytes were not detected in the water samples.

The recoveries of the isotopically-labeled surrogate standards in the sample extracts ranged from 94-125%. All of the labeled surrogate standard recoveries obtained for this project were within the target ranges specified in the method.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of the target perfluorinated compounds at the reporting limits. This indicates that the sample processing procedures did not significantly contribute to the analyte content determined for the sample material.

Laboratory spike samples were also prepared with the sample batch using clean reference matrix that had been fortified with native standards. The results show that the spiked native compounds in the laboratory spikes were recovered at 73-119%, with relative percent differences of 0-10%. These results were within the method limits. A third lab spike was analyzed and included in the above summary.

It should be noted that Pace Analytical has not yet completed the certification process for this method. Therefore, the results have been marked "N2" as qualified.

## Minnesota Laboratory Certifications

| <b>Authority</b> | <b>Certificate #</b> | <b>Authority</b> | <b>Certificate #</b> |
|------------------|----------------------|------------------|----------------------|
| A2LA             | 2926.01              | Mississippi      | MN00064              |
| Alabama          | 40770                | Montana          | CERT0092             |
| Alaska           | MN00064              | Nebraska         | NE-OS-18-06          |
| Alaska           | UST-078              | Nevada           | MN00064              |
| Arizona          | AZ0014               | New Jersey (NE)  | MN002                |
| Arkansas         | 88-0680              | New York (NEL)   | 11647                |
| CNMI Saipan      | MP0003               | New hampshire    | 2081                 |
| California       | MN00064              | North Carolina   | 27700                |
| Colorado         | MN00064              | North Carolina   | 530                  |
| Connecticut      | PH-0256              | North Dakota     | R-036                |
| EPA Region 8     | 8TMS-L               | Ohio             | 41244                |
| Florida (NELAP)  | E87605               | Ohio VAP         | CL101                |
| Georgia (EDP)    | 959                  | Oklahoma         | 9507                 |
| Guam EPA         | 959                  | Oregon (ELAP)    | MN200001             |
| Hawaii           | MN00064              | Oregon (OREL)    | MN300001             |
| Idaho            | MN00064              | Pennsylvania     | 68-00563             |
| Illinois         | 200011               | Puerto Rico      | MN00064              |
| Indiana          | C-MN-01              | South Carolina   | 74003001             |
| Iowa             | 368                  | Tennessee        | TN02818              |
| Kansas           | E-10167              | Texas            | T104704192           |
| Kentucky         | 90062                | Utah (NELAP)     | MN00064              |
| Louisiana        | 03086                | Virginia         | 460163               |
| Louisiana        | MN00064              | Washington       | C486                 |
| Maine            | MN00064              | West Virginia #  | 9952C                |
| Maryland         | 322                  | West Virginia D  | 382                  |
| Michigan         | 9909                 | Wisconsin        | 999407970            |
| Minnesota        | 027-053-137          | Wyoming          | 8TMS-L               |

## REPORT OF LABORATORY ANALYSIS

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Report No.....10424503

# Appendix A

## Sample Management



Sample Condition Upon Receipt  
 Client Name: Pasi-MI  
 Project #: \_\_\_\_\_  
 Courier:  Fed Ex  UPS  USPS  Client  
 Commercial  Pace  SpeeDee  Other: \_\_\_\_\_  
 Tracking Number: 4272-1336-9508

**WO#: 10424502**  
 PM: MEM1 Due Date: 03/29/18  
 CLIENT: PASI-MI

Custody Seal on Cooler/Box Present?  Yes  No Seals Intact?  Yes  No  
 Packing Material:  Bubble Wrap  Bubble Bags  None  Other: \_\_\_\_\_ Temp Blank?  Yes  No  
 Thermometer  151401163 Used:  G87A9155100842 Type of Ice:  Wet  Blue  None  Dry  Melted  
 Cooler Temp Read (°C): 0.8 Cooler Temp Corrected (°C): 1.0 Biological Tissue Frozen?  Yes  No  N/A  
 Temp should be above freezing to 6°C Correction Factor: +0.2 Date and Initials of Person Examining Contents: 3-22-18 SDD  
 USDA Regulated Soil (  N/A, water sample)  
 Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA, MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)?  Yes  No  
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)?  Yes  No  
 If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

|   | COMMENTS:   |
|---|---|
| Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   | 1.  |
| Chain of Custody Filled Out? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | 2.  |
| Chain of Custody Relinquished? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | 3.  |
| Sampler Name and/or Signature on COC? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A  | 4.  |
| Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No   | 5.  |
| Short Hold Time Analysis (<72 hr)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  | 6.  |
| Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  | 7.  |
| Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | 8.  |
| Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | 9.  |
| -Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |   |
| Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | 10.   |
| Filtered Volume Received for Dissolved Tests? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A  | 11. Note if sediment is visible in the dissolved container  |
| Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  | 12.   |
| -Includes Date/Time/ID/Analysis Matrix: <u>WT</u>   |   |
| All containers needing acid/base preservation have been checked? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A   | 13. <input type="checkbox"/> HNO <sub>3</sub> <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> NaOH Positive for Res. Chlorine? Y N |
| All containers needing preservation are found to be in compliance with EPA recommendation? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , <2pH, NaOH >9 Sulfide, NaOH >12 Cyanide) <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Sample #  |
| Exceptions: VOA, Coliform, TOC/DOC Oil and Grease, DRO/8015 (water) and Dioxin? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A  | Initial when completed: Lot # of added preservative:  |
| Headspace in VOA Vials (>6mm)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A   | 14.   |
| Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A  | 15.   |
| Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A  |   |
| Pace Trip Blank Lot # (if purchased): _____   |   |

CLIENT NOTIFICATION/RESOLUTION  
 Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/Resolution: \_\_\_\_\_  
 Field Data Required?  Yes  No

Project Manager Review: Megan McCalve Date: 3/23/18  
 Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

WO#: 469681



469681

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

P728 LI

Section C Invoice Information:

Company: Pace Environmental Services, Inc. Invoice Number: 2178688

Address: 2460 Levee Dr. SE, Grand Rapids, MI

Client: Brian Rice (brian@kueing.com)

Project Name: City of Allegan

Site Location: MI

Regulatory Agency: NPDES  GROUND WATER  DRINKING WATER  UST  RCRA  OTHER

Company Name: Amire Hagedorn

Address: 2460 Levee Dr. SE, Grand Rapids, MI

Reference: Nathan Ecklund

Project Profile #: 2178688

Requested Analysis Filtered (Y/N)

| ITEM # | Matrix Codes | MATRIX CODE | SAMPLE TYPE | COLLECTED      | DELIVERED BY/AFFILIATION | ACCEPTED BY/AFFILIATION | DATE     | TIME  | DATE  | TIME  | Temp in °C | Received on Ice (Y/N) | Sealed Cooler (Y/N) | Custody (Y/N) | Samples Inact (Y/N) |
|--------|--------------|-------------|-------------|----------------|--------------------------|-------------------------|----------|-------|-------|-------|------------|-----------------------|---------------------|---------------|---------------------|
| 1      | DW           | DW G        | G           | 02/11/18 13:45 | 181100 / FTS             | Youn Riegel             | 03/14/18 | 15:22 | 03/18 | 15:22 |            |                       |                     |               |                     |
| 2      | WT           | DW G        | G           | 03/19/18 13:47 |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 3      | WP           | DW G        | G           | 3/19/18 14:05  |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 4      | WP           | DW G        | G           | 3/19/18 14:07  |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 5      | WP           | DW G        | G           | 3/19/18 14:35  |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 6      | WP           | DW G        | G           | 3/19/18 14:37  |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 7      | WP           |             |             |                |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 8      | WP           |             |             |                |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 9      | WP           |             |             |                |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 10     | WP           |             |             |                |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 11     | WP           |             |             |                |                          |                         |          |       |       |       |            |                       |                     |               |                     |
| 12     | WP           |             |             |                |                          |                         |          |       |       |       |            |                       |                     |               |                     |

Additional Comments: Hold field blanks until it's determined if corresponding well samples have impacts - do not exceed hold times

Signature: Robert W. Riegel

Date Signed: 03/19/18

Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

# SAMPLE RECEIVING / LOG-IN CHECKLIST



|   |  |
|---|--|
| Client<br><b>FV-City of Allegan</b>         | Work Order #:<br><b>469681</b>               |
| Receipt Record Page/Line #<br><b>149-12</b> | New / Add To<br>Project Chemist<br>Sample #s |

|   |  |                          |  |   |
|---|--|--------------------------|--|---|
| Recorded by (initials/date)<br><b>AW 03/19/18</b> | Cooler<br><input checked="" type="checkbox"/> Cooler<br><input type="checkbox"/> Box<br><input type="checkbox"/> Other | Qty Received<br><b>1</b> | Thermometer Used<br><input checked="" type="checkbox"/> IR Gun (#202)<br><input type="checkbox"/> Digital Thermometer (#54)<br><input type="checkbox"/> Other (# ) | <input type="checkbox"/> See Additional Cooler Information Form |
|---|--|--------------------------|--|---|

| Cooler #   | Time        | Cooler #  | Time        | Cooler #  | Time        | Cooler #  | Time      |
|--|-------------|---|-------------|---|-------------|---|-----------|
|  | <b>1700</b> |   |             |   |             |   |           |
| Custody Seals:<br><input checked="" type="checkbox"/> None<br><input type="checkbox"/> Present / Intact<br><input type="checkbox"/> Present / Not Intact   |             | Custody Seals:<br><input type="checkbox"/> None<br><input type="checkbox"/> Present / Intact<br><input type="checkbox"/> Present / Not Intact   |             | Custody Seals:<br><input type="checkbox"/> None<br><input type="checkbox"/> Present / Intact<br><input type="checkbox"/> Present / Not Intact   |             | Custody Seals:<br><input type="checkbox"/> None<br><input type="checkbox"/> Present / Intact<br><input type="checkbox"/> Present / Not Intact   |           |
| Coolant Type:<br><input checked="" type="checkbox"/> Loose Ice<br><input type="checkbox"/> Bagged Ice<br><input type="checkbox"/> Blue Ice<br><input checked="" type="checkbox"/> None   |             | Coolant Type:<br><input type="checkbox"/> Loose Ice<br><input type="checkbox"/> Bagged Ice<br><input type="checkbox"/> Blue Ice<br><input type="checkbox"/> None  |             | Coolant Type:<br><input type="checkbox"/> Loose Ice<br><input type="checkbox"/> Bagged Ice<br><input type="checkbox"/> Blue Ice<br><input type="checkbox"/> None  |             | Coolant Type:<br><input type="checkbox"/> Loose Ice<br><input type="checkbox"/> Bagged Ice<br><input type="checkbox"/> Blue Ice<br><input type="checkbox"/> None  |           |
| Coolant Location:<br>Dispersed / Top / Middle / Bottom<br>Temp Blank Present: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No<br>If Present, Temperature Blank Location is:<br><input type="checkbox"/> Representative <input type="checkbox"/> Not Representative |             | Coolant Location:<br>Dispersed / Top / Middle / Bottom<br>Temp Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No<br>If Present, Temperature Blank Location is:<br><input type="checkbox"/> Representative <input type="checkbox"/> Not Representative |             | Coolant Location:<br>Dispersed / Top / Middle / Bottom<br>Temp Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No<br>If Present, Temperature Blank Location is:<br><input type="checkbox"/> Representative <input type="checkbox"/> Not Representative |             | Coolant Location:<br>Dispersed / Top / Middle / Bottom<br>Temp Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No<br>If Present, Temperature Blank Location is:<br><input type="checkbox"/> Representative <input type="checkbox"/> Not Representative |           |
|  | Observed °C | Correction Factor °C  | Actual °C   |   | Observed °C | Correction Factor °C  | Actual °C |
| Temp Blank:  | <b>0</b>    | <b>0</b>  | <b>0</b>    | Temp Blank:   |             |   |           |
| Sample 1:  | <b>14.4</b> | <b>0</b>  | <b>14.4</b> | Sample 1:   |             |   |           |
| Sample 2:  | <b>15.2</b> | <b>0</b>  | <b>15.2</b> | Sample 2:   |             |   |           |
| Sample 3:  | <b>13.9</b> | <b>0</b>  | <b>13.9</b> | Sample 3:   |             |   |           |
| 3 Sample Average °C: <b>14.5</b>   |             |   |             | 3 Sample Average °C:  |             |   |           |
| <input type="checkbox"/> Cooler ID on COC?   |             |   |             | <input type="checkbox"/> Cooler ID on COC?  |             |   |           |
| <input type="checkbox"/> VOC Trip Blank received?  |             |   |             | <input type="checkbox"/> VOC Trip Blank received?   |             |   |           |

**If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form**

**Paperwork Received**

|                                     |                          |   |
|-------------------------------------|--------------------------|---|
| Yes                                 | No                       | <input checked="" type="checkbox"/> Chain of Custody record(s)? If No, Initiated By _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Received for Lab Signed/Date/Time?  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Shipping document?  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Other _____   |

**Check Sample Preservation**

|                                     |                                     |                                     |  |
|-------------------------------------|-------------------------------------|-------------------------------------|--|
| N/A                                 | Yes                                 | No                                  | <input type="checkbox"/> Temperature Blank OR average sample temperature, ≥8° C?           |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> If either is ≥8° C, was thermal preservation required? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | If "Yes", Project Chemist Approval Initials: _____   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | If "Yes" Completed Non Con Cooler - Cont Inventory Form?                                   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | Completed Sample Preservation Verification Form?   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Samples chemically preserved correctly?                |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | If "No", added orange tag?   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> Received pre-preserved VOC soils?                      |
|                                     |                                     |                                     | <input type="checkbox"/> MeOH <input type="checkbox"/> Na <sub>2</sub> SO <sub>4</sub>     |

**COC Information**

Pace COC  Other \_\_\_\_\_

COC ID Numbers:  
**2178688**

**Check COC for Accuracy**

|                                     |                          |   |
|-------------------------------------|--------------------------|---|
| Yes                                 | No                       | <input checked="" type="checkbox"/> Analysis Requested?               |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> Sample ID matches COC?            |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> Sample Date and Time matches COC? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | Container type completed on COC?                                      |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | All container types indicated are received?                           |

**Check for Short Hold-Time Prep/Analyses**

|   |
|---|
| <input type="checkbox"/> Bacteriological                              |
| <input type="checkbox"/> Air Bags                                     |
| <input type="checkbox"/> EnCores / Methanol Pre-Preserved             |
| <input type="checkbox"/> Formaldehyde/Aldehyde                        |
| <input type="checkbox"/> Green-tagged containers                      |
| <input type="checkbox"/> Yellow/White-tagged 1 L ambers (SV Prep-Lab) |

**AFTER HOURS ONLY:**  
COPIES OF COC TO LAB AREA(S)

NONE RECEIVED

RECEIVED, COCs TO LAB(S)

**Sample Condition Summary**

|                                     |                                     |                          |  |
|-------------------------------------|-------------------------------------|--------------------------|--|
| N/A                                 | Yes                                 | No                       | <input checked="" type="checkbox"/> Broken containers/lids?                        |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> Missing or incomplete labels?                  |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> Illegible information on labels?               |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> Low volume received?                           |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> Inappropriate or non-Pace containers received? |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> VOC vials / TOX containers have headspace?                |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> Extra sample locations / containers not listed on COC?    |

**Notes**

Trip Blank received  Trip Blank not listed on COC

|   |   |                                      |
|---|---|--------------------------------------|
| Cooler Received (Date/Time)<br><b>AW 03/19/18</b> | Paperwork Delivered (Date/Time)<br><b>AW 03/19/18</b> | ≤1 Hour Goal Met?<br><b>Yes / No</b> |
|---|---|--------------------------------------|



## Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- \* = See Discussion

### REPORT OF LABORATORY ANALYSIS

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Report No.....10424503

## **Appendix B**

### Sample Analysis Summary



## PFAA Sample Analysis Summary

|                    |                      |                        |                      |
|--------------------|----------------------|------------------------|----------------------|
| Client's Sample ID | PW #2                | Date Extracted         | 03/26/2018           |
| Lab Sample ID      | 469681001            | Total Amount Extracted | 257 mL               |
| Filename           | 10LCMS02_180328A_031 | ICAL ID                | 180313A02            |
| Matrix             | Water                | Starting CCal          | 10LCMS02_180328A_024 |
| Collected          | 03/19/2018           | Ending CCal            | 10LCMS02_180328A_044 |
| Received           | 03/22/2018           | Method Blank Filename  | 10LCMS02_180328A_030 |

| Compound  | Concentration<br>(ng/L) | PQL<br>(ng/L) | MDL<br>(ng/L) | Dilution | Analyzed         | CAS No.     | Qual. |
|-----------|-------------------------|---------------|---------------|----------|------------------|-------------|-------|
| PFBS      | ND                      | 1.7           | 0.31          | 1        | 03/28/2018 16:13 | 375-73-5    | N2    |
| PFHxA     | ND                      | 1.9           | 0.38          | 1        | 03/28/2018 16:13 | 307-24-4    | N2    |
| PFHpA     | ND                      | 1.9           | 0.63          | 1        | 03/28/2018 16:13 | 375-85-9    | N2    |
| PFHxS     | ND                      | 1.8           | 0.60          | 1        | 03/28/2018 16:13 | 355-46-4    | N2    |
| PFOA      | ND                      | 1.9           | 0.42          | 1        | 03/28/2018 16:13 | 335-67-1    | N2    |
| PFNA      | ND                      | 1.9           | 0.67          | 1        | 03/28/2018 16:13 | 375-95-1    | N2    |
| PFOS      | ND                      | 1.9           | 0.44          | 1        | 03/28/2018 16:13 | 1763-23-1   | N2    |
| PFDA      | ND                      | 1.9           | 0.38          | 1        | 03/28/2018 16:13 | 335-76-2    | N2    |
| PFUdA     | ND                      | 1.9           | 0.54          | 1        | 03/28/2018 16:13 | 2058-94-8   | N2    |
| N-MeFOSAA | ND                      | 3.9           | 0.97          | 1        | 03/28/2018 16:13 | 2355-31-9   | N2    |
| N-EtFOSAA | ND                      | 3.9           | 1.3           | 1        | 03/28/2018 16:13 | 2991-50-6   | N2    |
| PFDoA     | ND                      | 1.9           | 0.46          | 1        | 03/28/2018 16:13 | 307-55-1    | N2    |
| PFTrDA    | ND                      | 1.9           | 0.44          | 1        | 03/28/2018 16:13 | 72629-94-8  | N2    |
| PFTeDA    | ND                      | 1.9           | 0.36          | 1        | 03/28/2018 16:13 | 376-06-7    | N2    |
| PFPrOPrA  | ND                      | 3.9           | 1.3           | 1        | 03/28/2018 16:13 | 62037-80-3  | N2    |
| PFBA      | ND                      | 1.9           | 0.60          | 1        | 03/28/2018 16:13 | 375-22-4    | N2    |
| PFPeA     | ND                      | 1.9           | 0.36          | 1        | 03/28/2018 16:13 | 2706-90-3   | N2    |
| PFDS      | ND                      | 1.9           | 0.46          | 1        | 03/28/2018 16:13 | 335-77-3    | N2    |
| NaDONA    | ND                      | 3.9           | 1.5           | 1        | 03/28/2018 16:13 | 958445-44-8 | N2    |
| PFHxDA    | ND                      | 1.9           | 0.50          | 1        | 03/28/2018 16:13 | 67905-19-5  | N2    |
| PFODA     | ND                      | 1.9           | 0.59          | 1        | 03/28/2018 16:13 | 16517-11-6  | N2    |

### Surrogate Standards

| SS Compound | Spiked | Found | %Recovery | Limits   | Pass/Fail |
|-------------|--------|-------|-----------|----------|-----------|
| 13C2_PFHxA  | 2.0    | 2.3   | 113       | 70 - 130 | Pass      |
| 13C2_PFDA   | 2.0    | 2.4   | 120       | 70 - 130 | Pass      |
| d5-EtFOSAA  | 8.0    | 8.5   | 106       | 70 - 130 | Pass      |

### Internal Standards

| IS Compound    | Area   | Ical Limits     | CCV Limits      | Pass/Fail |
|----------------|--------|-----------------|-----------------|-----------|
| 13C3_PFPPrOPrA | 295749 | 153106 - 459319 | 199100 - 398199 | Pass      |
| 13C2_PFOA      | 229798 | 104486 - 313458 | 135343 - 270685 | Pass      |
| 13C4_PFOS      | 273701 | 144806 - 434417 | 176743 - 353487 | Pass      |
| d3-MeFOSAA     | 166917 | 90929 - 272786  | 121272 - 242543 | Pass      |

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



## PFAA Sample Analysis Summary

|                    |                      |                        |                      |
|--------------------|----------------------|------------------------|----------------------|
| Client's Sample ID | PW #1                | Date Extracted         | 03/26/2018           |
| Lab Sample ID      | 469681003            | Total Amount Extracted | 259 mL               |
| Filename           | 10LCMS02_180328A_033 | ICAL ID                | 180313A02            |
| Matrix             | Water                | Starting CCal          | 10LCMS02_180328A_024 |
| Collected          | 03/19/2018           | Ending CCal            | 10LCMS02_180328A_044 |
| Received           | 03/22/2018           | Method Blank Filename  | 10LCMS02_180328A_030 |

| Compound  | Concentration<br>(ng/L) | PQL<br>(ng/L) | MDL<br>(ng/L) | Dilution | Analyzed         | CAS No.     | Qual. |
|-----------|-------------------------|---------------|---------------|----------|------------------|-------------|-------|
| PFBS      | ND                      | 1.7           | 0.31          | 1        | 03/28/2018 16:38 | 375-73-5    | N2    |
| PFHxA     | ND                      | 1.9           | 0.37          | 1        | 03/28/2018 16:38 | 307-24-4    | N2    |
| PFHpA     | ND                      | 1.9           | 0.62          | 1        | 03/28/2018 16:38 | 375-85-9    | N2    |
| PFHxS     | ND                      | 1.8           | 0.60          | 1        | 03/28/2018 16:38 | 355-46-4    | N2    |
| PFOA      | ND                      | 1.9           | 0.42          | 1        | 03/28/2018 16:38 | 335-67-1    | N2    |
| PFNA      | ND                      | 1.9           | 0.66          | 1        | 03/28/2018 16:38 | 375-95-1    | N2    |
| PFOS      | ND                      | 1.9           | 0.44          | 1        | 03/28/2018 16:38 | 1763-23-1   | N2    |
| PFDA      | ND                      | 1.9           | 0.38          | 1        | 03/28/2018 16:38 | 335-76-2    | N2    |
| PFUdA     | ND                      | 1.9           | 0.53          | 1        | 03/28/2018 16:38 | 2058-94-8   | N2    |
| N-MeFOSAA | ND                      | 3.9           | 0.96          | 1        | 03/28/2018 16:38 | 2355-31-9   | N2    |
| N-EtFOSAA | ND                      | 3.9           | 1.3           | 1        | 03/28/2018 16:38 | 2991-50-6   | N2    |
| PFDoA     | ND                      | 1.9           | 0.46          | 1        | 03/28/2018 16:38 | 307-55-1    | N2    |
| PFTrDA    | ND                      | 1.9           | 0.44          | 1        | 03/28/2018 16:38 | 72629-94-8  | N2    |
| PFTeDA    | ND                      | 1.9           | 0.36          | 1        | 03/28/2018 16:38 | 376-06-7    | N2    |
| PFPrOPrA  | ND                      | 3.9           | 1.3           | 1        | 03/28/2018 16:38 | 62037-80-3  | N2    |
| PFBA      | ND                      | 1.9           | 0.59          | 1        | 03/28/2018 16:38 | 375-22-4    | N2    |
| PFPeA     | ND                      | 1.9           | 0.36          | 1        | 03/28/2018 16:38 | 2706-90-3   | N2    |
| PFDS      | ND                      | 1.9           | 0.45          | 1        | 03/28/2018 16:38 | 335-77-3    | N2    |
| NaDONA    | ND                      | 3.9           | 1.5           | 1        | 03/28/2018 16:38 | 958445-44-8 | N2    |
| PFHxDA    | ND                      | 1.9           | 0.50          | 1        | 03/28/2018 16:38 | 67905-19-5  | N2    |
| PFODA     | ND                      | 1.9           | 0.58          | 1        | 03/28/2018 16:38 | 16517-11-6  | N2    |

### Surrogate Standards

| SS Compound | Spiked | Found | %Recovery | Limits   | Pass/Fail |
|-------------|--------|-------|-----------|----------|-----------|
| 13C2_PFHxA  | 2.0    | 2.5   | 125       | 70 - 130 | Pass      |
| 13C2_PFDA   | 2.0    | 2.3   | 117       | 70 - 130 | Pass      |
| d5-EtFOSAA  | 8.0    | 8.2   | 103       | 70 - 130 | Pass      |

### Internal Standards

| IS Compound    | Area   | Ical Limits     | CCV Limits      | Pass/Fail |
|----------------|--------|-----------------|-----------------|-----------|
| 13C3_PFPPrOPrA | 268740 | 153106 - 459319 | 199100 - 398199 | Pass      |
| 13C2_PFOA      | 200204 | 104486 - 313458 | 135343 - 270685 | Pass      |
| 13C4_PFOS      | 263586 | 144806 - 434417 | 176743 - 353487 | Pass      |
| d3-MeFOSAA     | 169717 | 90929 - 272786  | 121272 - 242543 | Pass      |

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



## PFAA Sample Analysis Summary

|                    |                      |                        |                      |
|--------------------|----------------------|------------------------|----------------------|
| Client's Sample ID | PW #1-dup            | Date Extracted         | 03/26/2018           |
| Lab Sample ID      | 469681003-DUP        | Total Amount Extracted | 249 mL               |
| Filename           | 10LCMS02_180328A_043 | ICAL ID                | 180313A02            |
| Matrix             | Water                | Starting CCal          | 10LCMS02_180328A_024 |
| Collected          | 03/19/2018           | Ending CCal            | 10LCMS02_180328A_044 |
| Received           | 03/22/2018           | Method Blank Filename  | 10LCMS02_180328A_030 |

| Compound  | Concentration<br>(ng/L) | PQL<br>(ng/L) | MDL<br>(ng/L) | Dilution | Analyzed         | CAS No.     | Qual. |
|-----------|-------------------------|---------------|---------------|----------|------------------|-------------|-------|
| PFBS      | ND                      | 1.8           | 0.32          | 1        | 03/28/2018 18:40 | 375-73-5    | N2    |
| PFHxA     | ND                      | 2.0           | 0.39          | 1        | 03/28/2018 18:40 | 307-24-4    | N2    |
| PFHpA     | ND                      | 2.0           | 0.65          | 1        | 03/28/2018 18:40 | 375-85-9    | N2    |
| PFHxS     | ND                      | 1.9           | 0.62          | 1        | 03/28/2018 18:40 | 355-46-4    | N2    |
| PFOA      | ND                      | 2.0           | 0.43          | 1        | 03/28/2018 18:40 | 335-67-1    | N2    |
| PFNA      | ND                      | 2.0           | 0.69          | 1        | 03/28/2018 18:40 | 375-95-1    | N2    |
| PFOS      | ND                      | 1.9           | 0.45          | 1        | 03/28/2018 18:40 | 1763-23-1   | N2    |
| PFDA      | ND                      | 2.0           | 0.39          | 1        | 03/28/2018 18:40 | 335-76-2    | N2    |
| PFUdA     | ND                      | 2.0           | 0.56          | 1        | 03/28/2018 18:40 | 2058-94-8   | N2    |
| N-MeFOSAA | ND                      | 4.0           | 1.00          | 1        | 03/28/2018 18:40 | 2355-31-9   | N2    |
| N-EtFOSAA | ND                      | 4.0           | 1.3           | 1        | 03/28/2018 18:40 | 2991-50-6   | N2    |
| PFDoA     | ND                      | 2.0           | 0.47          | 1        | 03/28/2018 18:40 | 307-55-1    | N2    |
| PFTrDA    | ND                      | 2.0           | 0.46          | 1        | 03/28/2018 18:40 | 72629-94-8  | N2    |
| PFTeDA    | ND                      | 2.0           | 0.38          | 1        | 03/28/2018 18:40 | 376-06-7    | N2    |
| PFPrOPrA  | ND                      | 4.0           | 1.4           | 1        | 03/28/2018 18:40 | 62037-80-3  | N2    |
| PFBA      | ND                      | 2.0           | 0.62          | 1        | 03/28/2018 18:40 | 375-22-4    | N2    |
| PFPeA     | ND                      | 2.0           | 0.37          | 1        | 03/28/2018 18:40 | 2706-90-3   | N2    |
| PFDS      | ND                      | 1.9           | 0.47          | 1        | 03/28/2018 18:40 | 335-77-3    | N2    |
| NaDONA    | ND                      | 4.0           | 1.5           | 1        | 03/28/2018 18:40 | 958445-44-8 | N2    |
| PFHxDA    | ND                      | 2.0           | 0.52          | 1        | 03/28/2018 18:40 | 67905-19-5  | N2    |
| PFODA     | ND                      | 2.0           | 0.61          | 1        | 03/28/2018 18:40 | 16517-11-6  | N2    |

### Surrogate Standards

| SS Compound | Spiked | Found | %Recovery | Limits   | Pass/Fail |
|-------------|--------|-------|-----------|----------|-----------|
| 13C2_PFHxA  | 2.0    | 2.1   | 105       | 70 - 130 | Pass      |
| 13C2_PFDA   | 2.0    | 2.0   | 102       | 70 - 130 | Pass      |
| d5-EtFOSAA  | 8.0    | 7.5   | 94        | 70 - 130 | Pass      |

### Internal Standards

| IS Compound    | Area   | Ical Limits     | CCV Limits      | Pass/Fail |
|----------------|--------|-----------------|-----------------|-----------|
| 13C3_PFPPrOPrA | 306292 | 153106 - 459319 | 199100 - 398199 | Pass      |
| 13C2_PFOA      | 238412 | 104486 - 313458 | 135343 - 270685 | Pass      |
| 13C4_PFOS      | 290829 | 144806 - 434417 | 176743 - 353487 | Pass      |
| d3-MeFOSAA     | 189519 | 90929 - 272786  | 121272 - 242543 | Pass      |

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



## PFAA Sample Analysis Summary

|                    |                      |                        |                      |
|--------------------|----------------------|------------------------|----------------------|
| Client's Sample ID | PW #5                | Date Extracted         | 03/26/2018           |
| Lab Sample ID      | 469681005            | Total Amount Extracted | 251 mL               |
| Filename           | 10LCMS02_180328A_035 | ICAL ID                | 180313A02            |
| Matrix             | Water                | Starting CCal          | 10LCMS02_180328A_024 |
| Collected          | 03/19/2018           | Ending CCal            | 10LCMS02_180328A_044 |
| Received           | 03/22/2018           | Method Blank Filename  | 10LCMS02_180328A_030 |

| Compound  | Concentration<br>(ng/L) | PQL<br>(ng/L) | MDL<br>(ng/L) | Dilution | Analyzed         | CAS No.     | Qual. |
|-----------|-------------------------|---------------|---------------|----------|------------------|-------------|-------|
| PFBS      | ND                      | 1.8           | 0.32          | 1        | 03/28/2018 17:02 | 375-73-5    | N2    |
| PFHxA     | ND                      | 2.0           | 0.39          | 1        | 03/28/2018 17:02 | 307-24-4    | N2    |
| PFHpA     | ND                      | 2.0           | 0.64          | 1        | 03/28/2018 17:02 | 375-85-9    | N2    |
| PFHxS     | ND                      | 1.9           | 0.62          | 1        | 03/28/2018 17:02 | 355-46-4    | N2    |
| PFOA      | ND                      | 2.0           | 0.43          | 1        | 03/28/2018 17:02 | 335-67-1    | N2    |
| PFNA      | ND                      | 2.0           | 0.68          | 1        | 03/28/2018 17:02 | 375-95-1    | N2    |
| PFOS      | ND                      | 1.9           | 0.45          | 1        | 03/28/2018 17:02 | 1763-23-1   | N2    |
| PFDA      | ND                      | 2.0           | 0.39          | 1        | 03/28/2018 17:02 | 335-76-2    | N2    |
| PFUdA     | ND                      | 2.0           | 0.55          | 1        | 03/28/2018 17:02 | 2058-94-8   | N2    |
| N-MeFOSAA | ND                      | 4.0           | 0.99          | 1        | 03/28/2018 17:02 | 2355-31-9   | N2    |
| N-EtFOSAA | ND                      | 4.0           | 1.3           | 1        | 03/28/2018 17:02 | 2991-50-6   | N2    |
| PFDoA     | ND                      | 2.0           | 0.47          | 1        | 03/28/2018 17:02 | 307-55-1    | N2    |
| PFTrDA    | ND                      | 2.0           | 0.45          | 1        | 03/28/2018 17:02 | 72629-94-8  | N2    |
| PFTeDA    | ND                      | 2.0           | 0.37          | 1        | 03/28/2018 17:02 | 376-06-7    | N2    |
| PFPrOPrA  | ND                      | 4.0           | 1.4           | 1        | 03/28/2018 17:02 | 62037-80-3  | N2    |
| PFBA      | ND                      | 2.0           | 0.61          | 1        | 03/28/2018 17:02 | 375-22-4    | N2    |
| PFPeA     | ND                      | 2.0           | 0.37          | 1        | 03/28/2018 17:02 | 2706-90-3   | N2    |
| PFDS      | ND                      | 1.9           | 0.47          | 1        | 03/28/2018 17:02 | 335-77-3    | N2    |
| NaDONA    | ND                      | 4.0           | 1.5           | 1        | 03/28/2018 17:02 | 958445-44-8 | N2    |
| PFHxDA    | ND                      | 2.0           | 0.51          | 1        | 03/28/2018 17:02 | 67905-19-5  | N2    |
| PFODA     | ND                      | 2.0           | 0.60          | 1        | 03/28/2018 17:02 | 16517-11-6  | N2    |

### Surrogate Standards

| SS Compound | Spiked | Found | %Recovery | Limits   | Pass/Fail |
|-------------|--------|-------|-----------|----------|-----------|
| 13C2_PFHxA  | 2.0    | 2.4   | 118       | 70 - 130 | Pass      |
| 13C2_PFDA   | 2.0    | 2.4   | 122       | 70 - 130 | Pass      |
| d5-EtFOSAA  | 8.0    | 8.8   | 110       | 70 - 130 | Pass      |

### Internal Standards

| IS Compound    | Area   | Ical Limits     | CCV Limits      | Pass/Fail |
|----------------|--------|-----------------|-----------------|-----------|
| 13C3_PFPPrOPrA | 297282 | 153106 - 459319 | 199100 - 398199 | Pass      |
| 13C2_PFOA      | 209445 | 104486 - 313458 | 135343 - 270685 | Pass      |
| 13C4_PFOS      | 276233 | 144806 - 434417 | 176743 - 353487 | Pass      |
| d3-MeFOSAA     | 163860 | 90929 - 272786  | 121272 - 242543 | Pass      |

50-150% of Ical area

70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



## PFAA Blank Analysis Summary

|                |                      |                        |                      |
|----------------|----------------------|------------------------|----------------------|
| Lab Sample ID  | BLANK-61336          | Total Amount Extracted | 260 mL               |
| Filename       | 10LCMS02_180328A_030 | ICAL ID                | 180313A02            |
| Matrix         | Water                | Starting CCal          | 10LCMS02_180328A_024 |
| Date Extracted | 03/26/2018           | Ending CCal            | 10LCMS02_180328A_044 |

| Compound  | Concentration<br>(ng/L) | PQL<br>(ng/L) | Dilution | Analyzed         | CAS No.     | Qual. |
|-----------|-------------------------|---------------|----------|------------------|-------------|-------|
| PFBS      | ND                      | 1.7           | 1        | 03/28/2018 16:01 | 375-73-5    | N2    |
| PFHxA     | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 307-24-4    | N2    |
| PFHpA     | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 375-85-9    | N2    |
| PFHxS     | ND                      | 1.8           | 1        | 03/28/2018 16:01 | 355-46-4    | N2    |
| PFOA      | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 335-67-1    | N2    |
| PFNA      | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 375-95-1    | N2    |
| PFOS      | ND                      | 1.8           | 1        | 03/28/2018 16:01 | 1763-23-1   | N2    |
| PFDA      | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 335-76-2    | N2    |
| PFUdA     | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 2058-94-8   | N2    |
| N-MeFOSAA | ND                      | 3.8           | 1        | 03/28/2018 16:01 | 2355-31-9   | N2    |
| N-EtFOSAA | ND                      | 3.8           | 1        | 03/28/2018 16:01 | 2991-50-6   | N2    |
| PFDaA     | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 307-55-1    | N2    |
| PFTTrDA   | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 72629-94-8  | N2    |
| PFTeDA    | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 376-06-7    | N2    |
| PFPPrOPrA | ND                      | 3.8           | 1        | 03/28/2018 16:01 | 62037-80-3  | N2    |
| PFBA      | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 375-22-4    | N2    |
| PFPeA     | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 2706-90-3   | N2    |
| PFDS      | ND                      | 1.8           | 1        | 03/28/2018 16:01 | 335-77-3    | N2    |
| NaDONA    | ND                      | 3.8           | 1        | 03/28/2018 16:01 | 958445-44-8 | N2    |
| PFHxDA    | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 67905-19-5  | N2    |
| PFODA     | ND                      | 1.9           | 1        | 03/28/2018 16:01 | 16517-11-6  | N2    |

### Surrogate Standards

| SS Compound | Spiked | Found | %Recovery | Limits   | Pass/Fail |
|-------------|--------|-------|-----------|----------|-----------|
| 13C2_PFHxA  | 2.0    | 1.9   | 93        | 70 - 130 | Pass      |
| 13C2_PFDA   | 2.0    | 1.9   | 94        | 70 - 130 | Pass      |
| d5-EtFOSAA  | 8.0    | 6.0   | 75        | 70 - 130 | Pass      |

### Internal Standards

| IS Compound    | Area   | Ical Limits     | CCV Limits      | Pass/Fail |
|----------------|--------|-----------------|-----------------|-----------|
| 13C3_PFPPrOPrA | 253706 | 153106 - 459319 | 199100 - 398199 | Pass      |
| 13C2_PFOA      | 219552 | 104486 - 313458 | 135343 - 270685 | Pass      |
| 13C4_PFOS      | 270276 | 144806 - 434417 | 176743 - 353487 | Pass      |
| d3-MeFOSAA     | 192965 | 90929 - 272786  | 121272 - 242543 | Pass      |

50-150% of Ical area  
70-140% of the preceding CCV area

N2 = The lab does not hold NELAC/TNI accreditation for this parameter.



**PFAA Laboratory Control Sample (LCS)**

|                        |                      |             |                  |
|------------------------|----------------------|-------------|------------------|
| LCS Lab Sample ID      | LCS-61337            | Matrix      | Water            |
| LCS Filename           | 10LCMS02_180328A_026 | Dilution    | 1                |
| Total Amount Extracted | 258mL                | Extracted   | 03/26/2018       |
| ICAL ID                | 180313A02            | Analyzed    | 03/28/2018 15:12 |
| Start CCal Filename    | 10LCMS02_180328A_024 | Injected By | QL               |
| End CCal Filename      | 10LCMS02_180328A_044 |             |                  |
| Method Blank Filename  | 10LCMS02_180328A_030 |             |                  |

| Compound  | Spiked (ng/L) | Recovered (ng/L) | Recovery % | Limits       |
|-----------|---------------|------------------|------------|--------------|
| PFBA      | 1.9           | 2.0              | 102        | 50.0 - 150.0 |
| PFPeA     | 1.9           | 1.8              | 95         | 50.0 - 150.0 |
| PFBS      | 1.7           | 1.7              | 98         | 50.0 - 150.0 |
| PFHxA     | 1.9           | 1.8              | 94         | 50.0 - 150.0 |
| PFPrOPrA  | 3.9           | 3.4              | 89         | 50.0 - 150.0 |
| PFHpA     | 1.9           | 1.8              | 94         | 50.0 - 150.0 |
| NaDONA    | 3.9           | 3.7              | 95         | 50.0 - 150.0 |
| PFHxS     | 1.8           | 2.1              | 114        | 50.0 - 150.0 |
| PFOA      | 1.9           | 2.0              | 105        | 50.0 - 150.0 |
| PFNA      | 1.9           | 2.2              | 114        | 50.0 - 150.0 |
| PFOS      | 1.9           | 2.2              | 117        | 50.0 - 150.0 |
| PFDA      | 1.9           | 1.8              | 93         | 50.0 - 150.0 |
| PFUdA     | 1.9           | 2.2              | 112        | 50.0 - 150.0 |
| N-MeFOSAA | 3.9           | 2.8              | 73         | 50.0 - 150.0 |
| N-EtFOSAA | 3.9           | 3.6              | 92         | 50.0 - 150.0 |
| PFDS      | 1.9           | 2.0              | 108        | 50.0 - 150.0 |
| PFDoA     | 1.9           | 1.8              | 92         | 50.0 - 150.0 |
| PFTTrDA   | 1.9           | 2.1              | 110        | 50.0 - 150.0 |
| PFTeDA    | 1.9           | 2.3              | 119        | 50.0 - 150.0 |
| PFHxDA    | 1.9           | 1.8              | 90         | 50.0 - 150.0 |
| PFODA     | 1.9           | 1.9              | 100        | 50.0 - 150.0 |

**Surrogate Standards**

| SS Compound | Spiked | Found | %Recovery | Limits   | Pass/Fail |
|-------------|--------|-------|-----------|----------|-----------|
| 13C2_PFHxA  | 2.0    | 2.3   | 116       | 50 - 150 | Pass      |
| 13C2_PFDA   | 2.0    | 2.4   | 120       | 50 - 150 | Pass      |
| d5-EtFOSAA  | 8.0    | 8.1   | 101       | 50 - 150 | Pass      |

**Internal Standards**

| IS Compound    | Area   | Ical Limits     | CCV Limits      | Pass/Fail |
|----------------|--------|-----------------|-----------------|-----------|
| 13C3_PFPPrOPrA | 282286 | 153106 - 459319 | 199100 - 398199 | Pass      |
| 13C2_PFOA      | 200150 | 104486 - 313458 | 135343 - 270685 | Pass      |
| 13C4_PFOS      | 258323 | 144806 - 434417 | 176743 - 353487 | Pass      |
| d3-MeFOSAA     | 163979 | 90929 - 272786  | 121272 - 242543 | Pass      |

50-150% of Ical area  
70-140% of the preceding CCV area





**PFAA Laboratory Control Sample (LCS)**

|                        |                      |             |                  |
|------------------------|----------------------|-------------|------------------|
| LCS Lab Sample ID      | LCS-61340            | Matrix      | Water            |
| LCS Filename           | 10LCMS02_180328A_027 | Dilution    | 1                |
| Total Amount Extracted | 261mL                | Extracted   | 03/26/2018       |
| ICAL ID                | 180313A02            | Analyzed    | 03/28/2018 15:25 |
| Start CCal Filename    | 10LCMS02_180328A_024 | Injected By | QL               |
| End CCal Filename      | 10LCMS02_180328A_044 |             |                  |
| Method Blank Filename  | 10LCMS02_180328A_030 |             |                  |

| Compound  | Spiked (ng/L) | Recovered (ng/L) | Recovery % | Limits       |
|-----------|---------------|------------------|------------|--------------|
| PFBA      | 19            | 19               | 99         | 70.0 - 130.0 |
| PFPeA     | 19            | 18               | 92         | 70.0 - 130.0 |
| PFBS      | 17            | 17               | 98         | 70.0 - 130.0 |
| PFHxA     | 19            | 18               | 95         | 70.0 - 130.0 |
| PFPrOPrA  | 38            | 36               | 93         | 70.0 - 130.0 |
| PFHpA     | 19            | 19               | 98         | 70.0 - 130.0 |
| NaDONA    | 38            | 40               | 103        | 70.0 - 130.0 |
| PFHxS     | 18            | 20               | 112        | 70.0 - 130.0 |
| PFOA      | 19            | 19               | 100        | 70.0 - 130.0 |
| PFNA      | 19            | 19               | 101        | 70.0 - 130.0 |
| PFOS      | 18            | 19               | 101        | 70.0 - 130.0 |
| PFDA      | 19            | 18               | 92         | 70.0 - 130.0 |
| PFUdA     | 19            | 22               | 114        | 70.0 - 130.0 |
| N-MeFOSAA | 38            | 36               | 94         | 70.0 - 130.0 |
| N-EtFOSAA | 38            | 34               | 89         | 70.0 - 130.0 |
| PFDS      | 18            | 20               | 110        | 70.0 - 130.0 |
| PFDoA     | 19            | 18               | 93         | 70.0 - 130.0 |
| PFTTrDA   | 19            | 22               | 115        | 70.0 - 130.0 |
| PFTeDA    | 19            | 22               | 114        | 70.0 - 130.0 |
| PFHxDA    | 19            | 18               | 95         | 70.0 - 130.0 |
| PFODA     | 19            | 19               | 99         | 70.0 - 130.0 |

**Surrogate Standards**

| SS Compound | Spiked | Found | %Recovery | Limits   | Pass/Fail |
|-------------|--------|-------|-----------|----------|-----------|
| 13C2_PFHxA  | 2.0    | 2.1   | 106       | 70 - 130 | Pass      |
| 13C2_PFDA   | 2.0    | 2.2   | 112       | 70 - 130 | Pass      |
| d5-EtFOSAA  | 8.0    | 7.5   | 93        | 70 - 130 | Pass      |

**Internal Standards**

| IS Compound    | Area   | Ical Limits     | CCV Limits      | Pass/Fail |
|----------------|--------|-----------------|-----------------|-----------|
| 13C3_PFPPrOPrA | 282268 | 153106 - 459319 | 199100 - 398199 | Pass      |
| 13C2_PFOA      | 209458 | 104486 - 313458 | 135343 - 270685 | Pass      |
| 13C4_PFOS      | 274595 | 144806 - 434417 | 176743 - 353487 | Pass      |
| d3-MeFOSAA     | 159197 | 90929 - 272786  | 121272 - 242543 | Pass      |

50-150% of Ical area  
70-140% of the preceding CCV area



**PFAA Laboratory Control Sample Duplicate (LCSD)**

|                        |                      |              |                      |
|------------------------|----------------------|--------------|----------------------|
| LCSD Lab Sample ID     | LCSD-61339           | LCS Filename | 10LCMS02_180328A_027 |
| LCSD Filename          | 10LCMS02_180328A_028 | Matrix       | Water                |
| Total Amount Extracted | 260mL                | Dilution     | 1                    |
| ICAL ID                | 180313A02            | Extracted    | 03/26/2018           |
| Start CCal Filename    | 10LCMS02_180328A_024 | Analyzed     | 03/28/2018 15:37     |
| End CCal Filename      | 10LCMS02_180328A_044 | Injected By  | QL                   |
| Method Blank Filename  | 10LCMS02_180328A_030 |              |                      |

| Compound  | Spiked (ng/L) | Recovered (ng/L) | Recovery % | Recovery Limits | RPD % |
|-----------|---------------|------------------|------------|-----------------|-------|
| PFBA      | 19            | 20               | 105        | 70.0 - 130.0    | 7     |
| PFPeA     | 19            | 19               | 99         | 70.0 - 130.0    | 7     |
| PFBS      | 17            | 16               | 96         | 70.0 - 130.0    | 2     |
| PFHxA     | 19            | 19               | 98         | 70.0 - 130.0    | 3     |
| PFPrOPrA  | 38            | 35               | 91         | 70.0 - 130.0    | 1     |
| PFHpA     | 19            | 19               | 99         | 70.0 - 130.0    | 1     |
| NaDONA    | 38            | 39               | 101        | 70.0 - 130.0    | 2     |
| PFHxS     | 18            | 20               | 112        | 70.0 - 130.0    | 1     |
| PFOA      | 19            | 21               | 107        | 70.0 - 130.0    | 7     |
| PFNA      | 19            | 21               | 110        | 70.0 - 130.0    | 9     |
| PFOS      | 18            | 19               | 103        | 70.0 - 130.0    | 2     |
| PFDA      | 19            | 16               | 83         | 70.0 - 130.0    | 10    |
| PFUdA     | 19            | 20               | 104        | 70.0 - 130.0    | 9     |
| N-MeFOSAA | 38            | 33               | 85         | 70.0 - 130.0    | 9     |
| N-EtFOSAA | 38            | 37               | 96         | 70.0 - 130.0    | 8     |
| PFDS      | 18            | 20               | 110        | 70.0 - 130.0    | 0     |
| PFDoA     | 19            | 18               | 91         | 70.0 - 130.0    | 2     |
| PFTTrDA   | 19            | 21               | 111        | 70.0 - 130.0    | 3     |
| PFTeDA    | 19            | 20               | 106        | 70.0 - 130.0    | 7     |
| PFHxDA    | 19            | 17               | 88         | 70.0 - 130.0    | 8     |
| PFODA     | 19            | 18               | 94         | 70.0 - 130.0    | 5     |

**Surrogate Standards**

| SS Compound | Spiked | Found | %Recovery | Limits   | Pass/Fail |
|-------------|--------|-------|-----------|----------|-----------|
| 13C2_PFHxA  | 2.0    | 2.3   | 114       | 70 - 130 | Pass      |
| 13C2_PFDA   | 2.0    | 2.2   | 112       | 70 - 130 | Pass      |
| d5-EtFOSAA  | 8.0    | 6.7   | 84        | 70 - 130 | Pass      |

**Internal Standards**

| IS Compound    | Area   | Ical Limits     | CCV Limits      | Pass/Fail |
|----------------|--------|-----------------|-----------------|-----------|
| 13C3_PFPPrOPrA | 287274 | 153106 - 459319 | 199100 - 398199 | Pass      |
| 13C2_PFOA      | 196720 | 104486 - 313458 | 135343 - 270685 | Pass      |
| 13C4_PFOS      | 266998 | 144806 - 434417 | 176743 - 353487 | Pass      |
| d3-MeFOSAA     | 167678 | 90929 - 272786  | 121272 - 242543 | Pass      |

50-150% of Ical area  
70-140% of the preceding CCV area