

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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

TestAmerica Job ID: 320-45051-2
Client Project/Site: 2018 PFAS Phase 2
Revision: 1

For:
Shannon & Wilson, Inc
2355 Hill Rd.
Fairbanks, Alaska 99709-5244

Attn: Sheila Hinkley



Authorized for release by:
12/9/2018 11:40:30 AM

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Qualifiers

LCMS

| Qualifier | Qualifier Description |
|-----------|--|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| B | Compound was found in the blank and sample. |

Glossary

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

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Job ID: 320-45051-2

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative
320-45051-2

Receipt

The samples were received on 11/8/2018 11:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.4° C.

LCMS

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

Organic Prep

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-259571.

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Client Sample ID: [REDACTED] -2018PFAS-P2

Lab Sample ID: 320-45051-3

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil | Fac | D | Method | Prep Type |
|--------------------------------------|--------|-----------|-----|------|------|-----|-----|---|----------------|-----------|
| Perfluorohexanoic acid (PFHxA) | 0.93 | J | 1.7 | 0.50 | ng/L | 1 | | | 537 (modified) | Total/NA |
| Perfluoroheptanoic acid (PFHpA) | 0.43 | J | 1.7 | 0.22 | ng/L | 1 | | | 537 (modified) | Total/NA |
| Perfluorononanoic acid (PFNA) | 0.42 | J | 1.7 | 0.23 | ng/L | 1 | | | 537 (modified) | Total/NA |
| Perfluorohexanesulfonic acid (PFHxS) | 0.77 | J B | 1.7 | 0.15 | ng/L | 1 | | | 537 (modified) | Total/NA |
| Perfluorooctane sulfonate (PFOS) | 0.61 | J | 1.7 | 0.47 | ng/L | 1 | | | 537 (modified) | Total/NA |

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Client Sample ID: ██████████-2018PFAS-P2

Lab Sample ID: 320-45051-3

Date Collected: 11/02/18 11:46

Matrix: Water

Date Received: 11/08/18 11:10

Method: 537 (modified) - Fluorinated Alkyl Substances

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|------------------|------------------|---------------|------|------|---|-----------------|-----------------|----------------|
| Perfluorohexanoic acid (PFHxA) | 0.93 | J | 1.7 | 0.50 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluoroheptanoic acid (PFHpA) | 0.43 | J | 1.7 | 0.22 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorooctanoic acid (PFOA) | ND | | 1.7 | 0.74 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorononanoic acid (PFNA) | 0.42 | J | 1.7 | 0.23 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorodecanoic acid (PFDA) | ND | | 1.7 | 0.27 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluoroundecanoic acid (PFUnA) | ND | | 1.7 | 0.96 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorododecanoic acid (PFDoA) | ND | | 1.7 | 0.48 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorotridecanoic acid (PFTriA) | ND | | 1.7 | 1.1 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | ND | | 1.7 | 0.25 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | ND | | 1.7 | 0.17 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.77 | J B | 1.7 | 0.15 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Perfluorooctane sulfonate (PFOS) | 0.61 | J | 1.7 | 0.47 | ng/L | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| Isotope Dilution | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| 13C2 PFHxA | 85 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C4 PFOA | 100 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C5 PFNA | 100 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C2 PFDA | 93 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C2 PFUnA | 102 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C2 PFDoA | 96 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C2 PFTeDA | 99 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C3 PFBS | 89 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 18O2 PFHxS | 96 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C4 PFOS | 92 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C4 PFHpA | 89 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |
| 13C5 PFPeA | 77 | | 25 - 150 | | | | 11/16/18 05:39 | 11/20/18 07:56 | 1 |

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
 Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

| Lab Sample ID | Client Sample ID | PFHxA (25-150) | PFOA (25-150) | PFNA (25-150) | PFDA (25-150) | PFUnA (25-150) | PFDoA (25-150) | PFTDA (25-150) | 3C3-PFBs (25-150) |
|---------------------|------------------------|-------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|----------------------|
| 320-45051-3 | [REDACTED]-2018PFAS-P2 | 85 | 100 | 100 | 93 | 102 | 96 | 99 | 89 |
| LCS 320-259571/2-A | Lab Control Sample | 95 | 98 | 100 | 95 | 102 | 102 | 112 | 92 |
| LCSD 320-259571/3-A | Lab Control Sample Dup | 92 | 99 | 101 | 96 | 94 | 97 | 108 | 91 |
| MB 320-259571/1-A | Method Blank | 91 | 95 | 103 | 98 | 92 | 98 | 114 | 83 |

Percent Isotope Dilution Recovery (Acceptance Limits)

| Lab Sample ID | Client Sample ID | PFHxS (25-150) | PFOS (25-150) | PFHpA (25-150) | PFPeA (25-150) |
|---------------------|------------------------|-------------------|------------------|-------------------|-------------------|
| 320-45051-3 | [REDACTED]-2018PFAS-P2 | 96 | 92 | 89 | 77 |
| LCS 320-259571/2-A | Lab Control Sample | 96 | 105 | 92 | 94 |
| LCSD 320-259571/3-A | Lab Control Sample Dup | 92 | 93 | 88 | 88 |
| MB 320-259571/1-A | Method Blank | 94 | 96 | 93 | 90 |

Surrogate Legend

- PFHxA = 13C2 PFHxA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDoA = 13C2 PFDoA
- PFTDA = 13C2 PFTeDA
- 13C3-PFBs = 13C3 PFBS
- PFHxS = 18O2 PFHxS
- PFOS = 13C4 PFOS
- PFHpA = 13C4 PFHpA
- PFPeA = 13C5 PFPeA

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-259571/1-A

Matrix: Water

Analysis Batch: 260228

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 259571

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|--------------------------------------|-----------|--------------|-----|------|------|---|----------------|----------------|---------|
| Perfluorohexanoic acid (PFHxA) | ND | | 2.0 | 0.58 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluoroheptanoic acid (PFHpA) | ND | | 2.0 | 0.25 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorooctanoic acid (PFOA) | ND | | 2.0 | 0.85 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorononanoic acid (PFNA) | ND | | 2.0 | 0.27 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorodecanoic acid (PFDA) | ND | | 2.0 | 0.31 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluoroundecanoic acid (PFUnA) | ND | | 2.0 | 1.1 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorododecanoic acid (PFDoA) | ND | | 2.0 | 0.55 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorotridecanoic acid (PFTriA) | ND | | 2.0 | 1.3 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorotetradecanoic acid (PFTeA) | ND | | 2.0 | 0.29 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorobutanesulfonic acid (PFBS) | ND | | 2.0 | 0.20 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorohexanesulfonic acid (PFHxS) | 0.334 | J | 2.0 | 0.17 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| Perfluorooctane sulfonate (PFOS) | ND | | 2.0 | 0.54 | ng/L | | 11/16/18 05:39 | 11/20/18 05:55 | 1 |

| Isotope Dilution | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|------------------|--------------|--------------|----------|----------------|----------------|---------|
| 13C2 PFHxA | 91 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C4 PFOA | 95 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C5 PFNA | 103 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C2 PFDA | 98 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C2 PFUnA | 92 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C2 PFDoA | 98 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C2 PFTeDA | 114 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C3 PFBS | 83 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 18O2 PFHxS | 94 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C4 PFOS | 96 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C4 PFHpA | 93 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |
| 13C5 PFPeA | 90 | | 25 - 150 | 11/16/18 05:39 | 11/20/18 05:55 | 1 |

Lab Sample ID: LCS 320-259571/2-A

Matrix: Water

Analysis Batch: 260228

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 259571

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | Limits |
|--------------------------------------|-------------|------------|---------------|------|---|------|----------|
| Perfluorohexanoic acid (PFHxA) | 40.0 | 40.4 | | ng/L | | 101 | 66 - 126 |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 43.3 | | ng/L | | 108 | 66 - 126 |
| Perfluorooctanoic acid (PFOA) | 40.0 | 40.7 | | ng/L | | 102 | 64 - 124 |
| Perfluorononanoic acid (PFNA) | 40.0 | 41.0 | | ng/L | | 102 | 68 - 128 |
| Perfluorodecanoic acid (PFDA) | 40.0 | 41.5 | | ng/L | | 104 | 69 - 129 |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 40.2 | | ng/L | | 101 | 60 - 120 |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 40.9 | | ng/L | | 102 | 71 - 131 |
| Perfluorotridecanoic acid (PFTriA) | 40.0 | 40.6 | | ng/L | | 101 | 72 - 132 |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 42.4 | | ng/L | | 106 | 68 - 128 |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 39.0 | | ng/L | | 110 | 73 - 133 |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 35.0 | | ng/L | | 96 | 63 - 123 |

TestAmerica Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-259571/2-A

Matrix: Water

Analysis Batch: 260228

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 259571

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|----------------------------------|-------------|------------|---------------|------|---|------|--------------|
| Perfluorooctane sulfonate (PFOS) | 37.1 | 33.0 | | ng/L | | 89 | 67 - 127 |

| Isotope Dilution | LCS | | Limits |
|------------------|-----------|-----------|----------|
| | %Recovery | Qualifier | |
| 13C2 PFHxA | 95 | | 25 - 150 |
| 13C4 PFOA | 98 | | 25 - 150 |
| 13C5 PFNA | 100 | | 25 - 150 |
| 13C2 PFDA | 95 | | 25 - 150 |
| 13C2 PFUnA | 102 | | 25 - 150 |
| 13C2 PFDoA | 102 | | 25 - 150 |
| 13C2 PFTeDA | 112 | | 25 - 150 |
| 13C3 PFBS | 92 | | 25 - 150 |
| 18O2 PFHxS | 96 | | 25 - 150 |
| 13C4 PFOS | 105 | | 25 - 150 |
| 13C4 PFHpA | 92 | | 25 - 150 |
| 13C5 PFPeA | 94 | | 25 - 150 |

Lab Sample ID: LCSD 320-259571/3-A

Matrix: Water

Analysis Batch: 260228

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 259571

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|--------------------------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Perfluorohexanoic acid (PFHxA) | 40.0 | 39.1 | | ng/L | | 98 | 66 - 126 | 3 | 30 |
| Perfluoroheptanoic acid (PFHpA) | 40.0 | 43.0 | | ng/L | | 108 | 66 - 126 | 1 | 30 |
| Perfluorooctanoic acid (PFOA) | 40.0 | 38.8 | | ng/L | | 97 | 64 - 124 | 5 | 30 |
| Perfluorononanoic acid (PFNA) | 40.0 | 40.0 | | ng/L | | 100 | 68 - 128 | 3 | 30 |
| Perfluorodecanoic acid (PFDA) | 40.0 | 38.4 | | ng/L | | 96 | 69 - 129 | 8 | 30 |
| Perfluoroundecanoic acid (PFUnA) | 40.0 | 40.6 | | ng/L | | 102 | 60 - 120 | 1 | 30 |
| Perfluorododecanoic acid (PFDoA) | 40.0 | 37.8 | | ng/L | | 95 | 71 - 131 | 8 | 30 |
| Perfluorotridecanoic acid (PFTriA) | 40.0 | 41.7 | | ng/L | | 104 | 72 - 132 | 3 | 30 |
| Perfluorotetradecanoic acid (PFTeA) | 40.0 | 37.5 | | ng/L | | 94 | 68 - 128 | 12 | 30 |
| Perfluorobutanesulfonic acid (PFBS) | 35.4 | 36.0 | | ng/L | | 102 | 73 - 133 | 8 | 30 |
| Perfluorohexanesulfonic acid (PFHxS) | 36.4 | 33.2 | | ng/L | | 91 | 63 - 123 | 5 | 30 |
| Perfluorooctane sulfonate (PFOS) | 37.1 | 37.0 | | ng/L | | 100 | 67 - 127 | 11 | 30 |

| Isotope Dilution | LCSD | | Limits |
|------------------|-----------|-----------|----------|
| | %Recovery | Qualifier | |
| 13C2 PFHxA | 92 | | 25 - 150 |
| 13C4 PFOA | 99 | | 25 - 150 |
| 13C5 PFNA | 101 | | 25 - 150 |
| 13C2 PFDA | 96 | | 25 - 150 |
| 13C2 PFUnA | 94 | | 25 - 150 |
| 13C2 PFDoA | 97 | | 25 - 150 |
| 13C2 PFTeDA | 108 | | 25 - 150 |

TestAmerica Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-259571/3-A

Matrix: Water

Analysis Batch: 260228

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 259571

| <i>Isotope Dilution</i> | <i>LCSD</i> | | <i>Limits</i> |
|-------------------------|------------------|------------------|---------------|
| | <i>%Recovery</i> | <i>Qualifier</i> | |
| 13C3 PFBS | 91 | | 25 - 150 |
| 18O2 PFHxS | 92 | | 25 - 150 |
| 13C4 PFOS | 93 | | 25 - 150 |
| 13C4 PFHpA | 88 | | 25 - 150 |
| 13C5 PFPeA | 88 | | 25 - 150 |

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

LCMS

Prep Batch: 259571

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 320-45051-3 | ██████████-2018PFAS-P2 | Total/NA | Water | 3535 | |
| MB 320-259571/1-A | Method Blank | Total/NA | Water | 3535 | |
| LCS 320-259571/2-A | Lab Control Sample | Total/NA | Water | 3535 | |
| LCSD 320-259571/3-A | Lab Control Sample Dup | Total/NA | Water | 3535 | |

Analysis Batch: 260228

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|----------------|------------|
| 320-45051-3 | ██████████ 2018PFAS-P2 | Total/NA | Water | 537 (modified) | 259571 |
| MB 320-259571/1-A | Method Blank | Total/NA | Water | 537 (modified) | 259571 |
| LCS 320-259571/2-A | Lab Control Sample | Total/NA | Water | 537 (modified) | 259571 |
| LCSD 320-259571/3-A | Lab Control Sample Dup | Total/NA | Water | 537 (modified) | 259571 |

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Client Sample ID: [REDACTED]-2018PFAS-P2

Lab Sample ID: 320-45051-3

Date Collected: 11/02/18 11:46

Matrix: Water

Date Received: 11/08/18 11:10

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-----------|------------|----------------|-----|------------|----------------|--------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3535 | | | 287.8 mL | 10.00 mL | 259571 | 11/16/18 05:39 | MNV | TAL SAC |
| Total/NA | Analysis | 537 (modified) | | 1 | | | 260228 | 11/20/18 07:56 | S1M | TAL SAC |

Laboratory References:

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

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
 Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

Laboratory: TestAmerica Sacramento

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

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|--------------------|---------------|------------|-----------------------|-----------------|
| Alaska (UST) | State Program | 10 | 17-020 | 01-20-21 |
| ANAB | DoD ELAP | | L2468 | 01-20-21 |
| Arizona | State Program | 9 | AZ0708 | 08-11-19 |
| Arkansas DEQ | State Program | 6 | 88-0691 | 06-17-19 |
| California | State Program | 9 | 2897 | 01-31-19 |
| Colorado | State Program | 8 | CA00044 | 08-31-19 |
| Connecticut | State Program | 1 | PH-0691 | 06-30-19 |
| Florida | NELAP | 4 | E87570 | 06-30-19 |
| Georgia | State Program | 4 | N/A | 01-28-19 |
| Hawaii | State Program | 9 | N/A | 01-29-19 |
| Illinois | NELAP | 5 | 200060 | 03-17-19 |
| Kansas | NELAP | 7 | E-10375 | 11-30-18 |
| Louisiana | NELAP | 6 | 30612 | 06-30-19 |
| Maine | State Program | 1 | CA0004 | 04-14-20 |
| Michigan | State Program | 5 | 9947 | 01-31-20 |
| Nevada | State Program | 9 | CA00044 | 07-31-19 |
| New Hampshire | NELAP | 1 | 2997 | 04-18-19 |
| New Jersey | NELAP | 2 | CA005 | 06-30-19 |
| New York | NELAP | 2 | 11666 | 03-31-19 |
| Oregon | NELAP | 10 | 4040 | 01-29-19 |
| Pennsylvania | NELAP | 3 | 68-01272 | 03-31-19 |
| Texas | NELAP | 6 | T104704399 | 05-31-19 |
| US Fish & Wildlife | Federal | | LE148388-0 | 07-31-19 |
| USDA | Federal | | P330-18-00239 | 01-17-21 |
| USEPA UCMR | Federal | 1 | CA00044 | 12-31-20 |
| Utah | NELAP | 8 | CA00044 | 02-28-19 |
| Vermont | State Program | 1 | VT-4040 | 04-30-19 |
| Virginia | NELAP | 3 | 460278 | 03-14-19 |
| Washington | State Program | 10 | C581 | 05-05-19 |
| West Virginia (DW) | State Program | 3 | 9930C | 12-31-18 |
| Wyoming | State Program | 8 | 8TMS-L | 01-28-19 |

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

| Method | Method Description | Protocol | Laboratory |
|----------------|------------------------------|----------|------------|
| 537 (modified) | Fluorinated Alkyl Substances | EPA | TAL SAC |
| 3535 | Solid-Phase Extraction (SPE) | SW846 | TAL SAC |

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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



Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: 2018 PFAS Phase 2

TestAmerica Job ID: 320-45051-2

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received |
|---------------|-----------------------|--------|----------------|----------------|
| 320-45051-3 | [REDACTED] 018PFAS-P2 | Water | 11/02/18 11:46 | 11/08/18 11:10 |

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

Turn Around Time:
 Normal Rush
 Please Specify

Quote No:

J-Flags: Yes No

| Sample Identity | Lab No. | Time | Date Sampled | Analytical Methods (include preservative if used) | | | | Total Number of Containers | Remarks/Matrix Composition/Grab? Sample Containers |
|-----------------|-----------|------|--------------|---|--|--|--|----------------------------|--|
| [REDACTED] | 8 PFAS-P2 | 1146 | 11/3/18 | 2 | | | | 2 | GW |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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Project Information
 Number: 101965-002
 Name: 2018 PFAS Phase 2
 Contact: SMH
 Ongoing Project? Yes No
 Sampler: SMH

Sample Receipt
 Total No. of Containers: 2
 COC Seals/Intact? Y/N/NA
 Received Good Cond./Cold Good
 Temp: 3-7
 Delivery Method: Goldstreak

Relinquished By: 1.
 Signature: [Signature] Time: 12:17
 Printed Name: Morgan S. Cumbo Date: 11/7/18
 Company: Shannon & Wilson, Inc

Relinquished By: 2.
 Signature: _____ Time: _____
 Printed Name: _____ Date: _____
 Company: _____

Relinquished By: 3.
 Signature: _____ Time: _____
 Printed Name: _____ Date: _____
 Company: _____

Notes:
Bill to SWI

Received By: 1.
 Signature: [Signature] Time: 11:10
 Printed Name: David Date: 11/4/18
 Company: AS

Received By: 2.
 Signature: _____ Time: _____
 Printed Name: _____ Date: _____
 Company: _____

Received By: 3.
 Signature: _____ Time: _____
 Printed Name: _____ Date: _____
 Company: _____

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
 Yellow - w/shipment - for consignee files
 Pink - Shannon & Wilson - job file

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Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-45051-2

Login Number: 45051

List Source: TestAmerica Sacramento

List Number: 1

Creator: Gooch, Mayce

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