

Brunswick County Public Utilities - NC

3954 Clearwell Dr NE
Leland, NC 28451

Northwest Water Plant

Leland, NC

Samples Received: 07/14/22

Analytical Report
0722-741

Isotope Dilution Method
PFAS



Enthalpy Analytical, LLC – Ultratrace

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I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains _____ pages.

....."Report Issued Date: _____"



Summary of Results



Enthalpy Analytical

Job No.: 0722-741-1 PFAS by Isotope Dilution (non-potable water)

Brunswick County Public Utilities - NC Client Project: N/A Site: Northwest Water Plant

Summary

| | Compound | CAS | 071422-SO1 ng/L | 071422-EO1 ng/L |
|------------|--------------------|--------------|--------------------|--------------------|
| Acids | PFBA | 375-22-4 | 5.18 | 3.97 |
| | PFPeA | 2706-90-3 | 10.8 | 10.8 |
| | PFHxA | 307-24-4 | 8.44 | 8.30 |
| | PFHpA | 375-85-9 | 3.78 | 3.70 |
| | PFOA | 335-67-1 | 6.26 | 5.79 |
| | PFNA | 375-95-1 | 0.883 | 0.793 |
| | PFDA | 335-76-2 | 0.744 | 0.513 J |
| | PFUnDA | 2058-94-8 | 0.291 J | 0.175 J |
| | PFDoDA | 307-55-1 | 0.0500 LB | 0.0313 LB |
| | PFTTrDA | 72629-94-8 | ND U | 0.0183 LB |
| | PFTeDA | 376-06-7 | 0.0206 LB | 0.00978 LB |
| Sulfonates | PFBS | 375-73-5 | 5.32 | 5.32 |
| | PFPeS | 2706-91-4 | 0.932 | 0.824 |
| | PFHxS | 355-46-4 | 5.67 | 4.90 |
| | PFHpS | 375-92-8 | 0.284 J | 0.284 J |
| | PFOS | 1763-23-1 | 12.8 | 11.2 |
| | PFNS | 68259-12-1 | ND U | ND U |
| | PFDS | 335-77-3 | ND U | ND U |
| | 4:2 FTS | 757124-72-4 | ND U | ND U |
| | 6:2 FTS | 27619-97-2 | 0.156 J | 0.276 J |
| 8:2 FTS | 39108-34-4 | 0.0114 LB | 0.0196 LB | |
| Other | PFOSA | 754-91-6 | 0.0594 LB | 0.0498 LB |
| | N-MeFOSAA | 2355-31-9 | ND U | 0.0754 LB |
| | N-EtFOSAA | 2991-50-6 | ND U | 0.0460 LB |
| | HFPO-DA | 13252-13-6 | 8.77 | 6.85 |
| | PFMOAA | 674-13-5 | 40.6 | 24.5 |
| | PFMOPrA | 377-73-1 | 0.0810 L | ND U |
| | PFO2HxA | 39492-88-1 | 8.21 | 6.94 |
| | PFO3OA | 39492-89-2 | 2.14 | ND U |
| | PFO4DA | 39492-90-5 | ND U | ND U |
| | Nafion Byproduct 1 | 29311-67-9 | 0.000635 L | 0.0439 L |
| | ADONA | 919005-14-4 | ND U | ND U |
| | 9Cl-PF3ONS | 756426-58-1 | ND U | ND U |
| | 11Cl-PF3OUdS | 763051-92-9 | ND U | ND U |
| | 10:2 FTS | 120226-60-0 | ND U | ND U |
| | EVE Acid | 69087-46-3 | ND U | 0.00336 L |
| | FBSA | 30334-69-1 | 0.902 | 0.695 |
| | Hydro-EVE Acid | 773804-62-9 | 0.359 L | 0.298 L |
| | Hydrolyzed PSDA | 2416366-19-1 | 25.1 | 12.7 |
| | Nafion Byproduct 2 | 749836-20-2 | 0.606 | 0.487 J |
| | N-EtFOSA | 4151-50-2 | ND U | ND U |
| | N-EtFOSE | 1691-99-2 | ND U | ND U |
| | NFDHA | 151772-58-6 | ND U | ND U |
| | N-MeFOSA | 31506-32-8 | ND U | ND U |
| | N-MeFOSE | 24448-09-7 | ND U | ND U |
| | NVHOS | 1132933-86-8 | 2.51 | 2.53 |
| | PEPA | 267239-61-2 | 3.91 | 2.50 |
| | PFECA-G | 801212-59-9 | ND U | ND U |
| | PFEESA | 113507-82-7 | ND U | ND U |
| | PFHxDA | 67905-19-5 | ND U | 0.00649 L |
| | PFMOBA | 863090-89-5 | ND U | ND U |
| | PFO5DA | 39492-91-6 | 0.199 L | ND U |
| | PMPA | 13140-29-9 | 9.38 | 8.03 |
| R-EVE | 2416366-22-6 | 21.2 | 18.9 | |
| R-PSDA | 2416366-18-0 | ND U | ND U | |
| R-PSDCA | 241636-21-5 | 0.0222 L | 0.0388 L | |

Detailed Results

Enthalpy Analytical

Job No.: 0722-741-1 PFAS by Isotope Dilution (non-potable water)

Brunswick County Public Utilities - NC Client Project: N/A Site: Northwest Water Plant

| | | | | | |
|---------------|------------------|---------------|------------------|------------------|--------|
| Enthalpy ID | 0722-741-001-1 | Prep Batch | EU13696 | Sample Vol (mL) | 284.42 |
| Sample Name | 071422-SO1 | Prep Date | 2022-07-18 14:56 | Extract Vol (mL) | 0.4 |
| Matrix | Aqueous | Analysis Date | 2022-07-19 22:12 | Split Factor | N/A |
| Sampling Date | 20220714 00:00 | Analyst | itbrooker | Method Code | WM-026 |
| Received Date | 2022-07-14 14:00 | Instrument | Sauron | Sample Type | Sample |

| | Compound | CAS | Extract Concentration ng/L | Sample Concentration ng/L | Formatted Result ng/L | LOD ng/L | LOQ ng/L | Recovery Limits | Recovery | Flags |
|-------------|--------------------|--------------|----------------------------|---------------------------|-----------------------|----------|----------|-----------------|----------|-------|
| Acids | PFBA | 375-22-4 | 3686.26 | 5.18 | 5.18 | 0.134 | 0.563 | | | |
| | PFPeA | 2706-90-3 | 7702.68 | 10.8 | 10.8 | 0.149 | 0.563 | | | |
| | PFHxA | 307-24-4 | 5998.41 | 8.44 | 8.44 | 0.170 | 0.563 | | | |
| | PFHpA | 375-85-9 | 2688.84 | 3.78 | 3.78 | 0.107 | 0.563 | | | |
| | PFOA | 335-67-1 | 4447.86 | 6.26 | 6.26 | 0.156 | 0.563 | | | |
| | PFNA | 375-95-1 | 628.06 | 0.883 | 0.883 | 0.0669 | 0.563 | | | |
| | PFDA | 335-76-2 | 529.07 | 0.744 | 0.744 | 0.0743 | 0.563 | | | |
| | PFUnDA | 2058-94-8 | 206.78 | 0.291 | 0.291 | 0.163 | 0.563 | | | J |
| | PFDoDA | 307-55-1 | 35.56 | 0.0500 | 0.0500 | 0.178 | 0.563 | | | LB |
| | PFTriDA | 72629-94-8 | ND | ND | ND | 0.133 | 0.563 | | | U |
| PFTeDA | 376-06-7 | 14.63 | 0.0206 | 0.0206 | 0.192 | 0.563 | | | LB | |
| Sulfonates | PFBS | 375-73-5 | 3779.48 | 5.32 | 5.32 | 0.312 | 0.657 | | | |
| | PFPeS | 2706-91-4 | 662.65 | 0.932 | 0.932 | 0.181 | 0.530 | | | |
| | PFHxS | 355-46-4 | 4034.37 | 5.67 | 5.67 | 0.168 | 0.515 | | | |
| | PFHpS | 375-92-8 | 201.86 | 0.284 | 0.284 | 0.119 | 0.536 | | | J |
| | PFOS | 1763-23-1 | 9119.89 | 12.8 | 12.8 | 0.141 | 0.521 | | | |
| | PFNS | 68259-12-1 | ND | ND | ND | 0.0759 | 0.542 | | | U |
| | PFDS | 335-77-3 | ND | ND | ND | 0.169 | 0.542 | | | U |
| | 4:2 FTS | 757124-72-4 | ND | ND | ND | 0.104 | 0.527 | | | U |
| | 6:2 FTS | 27619-97-2 | 110.86 | 0.156 | 0.156 | 0.102 | 0.536 | | | J |
| | 8:2 FTS | 39108-34-4 | 8.12 | 0.0114 | 0.0114 | 0.150 | 0.539 | | | LB |
| Other | PFOSA | 754-91-6 | 42.26 | 0.0594 | 0.0594 | 0.114 | 0.563 | | | LB |
| | N-MeFOSAA | 2355-31-9 | ND | ND | ND | 0.127 | 0.563 | | | U |
| | N-EiFOSAA | 2991-50-6 | ND | ND | ND | 0.0958 | 0.563 | | | U |
| | HFPO-DA | 13252-13-6 | 6239.37 | 8.77 | 8.77 | 0.200 | 0.563 | | | |
| | PFMOAA | 674-13-5 | 28900.00 | 40.6 | 40.6 | 1.27 | 1.27 | | | |
| | PFMOPra | 377-73-1 | 57.61 | 0.0810 | 0.0810 | 0.211 | 0.563 | | | L |
| | PFO2HxA | 39492-88-1 | 5834.66 | 8.21 | 8.21 | 1.27 | 1.27 | | | |
| | PFO3OA | 39492-89-2 | 1519.54 | 2.14 | 2.14 | 1.27 | 1.27 | | | |
| | PFO4DA | 39492-90-5 | ND | ND | ND | 1.34 | 1.34 | | | U |
| | Nafion Byproduct 1 | 29311-67-9 | 0.45 | 0.000635 | 0.000635 | 0.267 | 0.563 | | | L |
| | ADONA | 919005-14-4 | ND | ND | ND | 0.105 | 0.533 | | | U |
| | 9Cl-PF3OUds | 756426-58-1 | ND | ND | ND | 0.105 | 0.524 | | | U |
| | 11Cl-PF3OUds | 763051-92-9 | ND | ND | ND | 0.105 | 0.530 | | | U |
| | 10:2 FTS | 120226-60-0 | ND | ND | ND | 0.211 | 0.563 | | | U |
| | EVE Acid | 69087-46-3 | ND | ND | ND | 1.27 | 1.27 | | | U |
| | FBSA | 30334-69-1 | 641.44 | 0.902 | 0.902 | 0.211 | 0.563 | | | |
| | Hydro-EVE Acid | 773804-62-9 | 255.37 | 0.359 | 0.359 | 1.27 | 1.27 | | | L |
| | Hydrolyzed PSDA | 2416366-19-1 | 17838.13 | 25.1 | 25.1 | 1.27 | 1.27 | | | |
| | Nafion Byproduct 2 | 749836-20-2 | 431.09 | 0.606 | 0.606 | 0.267 | 0.563 | | | |
| | N-EiFOA | 4151-50-2 | ND | ND | ND | 0.211 | 0.563 | | | U |
| | N-EiFOSE | 1691-99-2 | ND | ND | ND | 6.33 | 6.33 | | | U |
| | NFDHA | 151772-58-6 | ND | ND | ND | 0.211 | 0.563 | | | U |
| | N-MeFOA | 31506-32-8 | ND | ND | ND | 0.211 | 0.563 | | | U |
| | N-MeFOSE | 24448-09-7 | ND | ND | ND | 6.33 | 6.33 | | | U |
| | NVHOS | 1132933-86-8 | 1785.49 | 2.51 | 2.51 | 1.27 | 1.27 | | | |
| PEPA | 267239-61-2 | 2783.21 | 3.91 | 3.91 | 1.27 | 1.27 | | | | |
| PFECA-G | 801212-59-9 | ND | ND | ND | 0.267 | 1.27 | | | U | |
| PFEESA | 113507-82-7 | ND | ND | ND | 0.211 | 0.563 | | | U | |
| PFHxDA | 67905-19-5 | ND | ND | ND | 1.27 | 1.27 | | | U | |
| PFMOBA | 863090-89-5 | ND | ND | ND | 1.27 | 1.27 | | | U | |
| PFO5DA | 39492-91-6 | 141.29 | 0.199 | 0.199 | 1.34 | 1.34 | | | L | |
| PMPA | 13140-29-9 | 6672.69 | 9.38 | 9.38 | 1.27 | 1.27 | | | | |
| R-EVE | 2416366-22-6 | 15048.98 | 21.2 | 21.2 | 1.27 | 1.27 | | | | |
| R-PSDA | 2416366-18-0 | ND | ND | ND | 1.27 | 1.27 | | | U | |
| R-PSDCA | 241636-21-5 | 15.78 | 0.0222 | 0.0222 | 1.27 | 1.27 | | | L | |
| ES | MPFBA | | 5002.62 | 7.04 | | | | 20-150% | 100.1% | |
| | MSPFPeA | | 8696.19 | 12.2 | | | | 20-150% | 173.9% | Q |
| | M3PFBS | | 12984.85 | 18.3 | | | | 20-150% | 259.7% | Q |
| | M2-4:2 FTS | | 14212.46 | 20.0 | | | | 20-150% | 284.2% | Q |
| | MSPFHxA | | 4690.38 | 6.60 | | | | 20-150% | 93.8% | |
| | M3HFPO-DA | | 4539.14 | 6.38 | | | | 20-150% | 90.8% | |
| | M4PFHpA | | 5203.27 | 7.32 | | | | 20-150% | 104.1% | |
| | M3PFHxS | | 5227.80 | 7.35 | | | | 20-150% | 104.6% | |
| | M2-6:2 FTS | | 6511.09 | 9.16 | | | | 20-150% | 130.2% | |
| | M8PFOA | | 4848.05 | 6.82 | | | | 20-150% | 97.0% | |
| | M9PFNA | | 4843.67 | 6.81 | | | | 20-150% | 96.9% | |
| | M8PFOS | | 4666.05 | 6.56 | | | | 20-150% | 93.3% | |
| | M2-8:2 FTS | | 5169.20 | 7.27 | | | | 20-150% | 103.4% | |
| | M8FOSA-I | | 3556.00 | 5.00 | | | | 20-150% | 71.1% | |
| | M6PFDA | | 4788.18 | 6.73 | | | | 20-150% | 95.8% | |
| | d3-N-MeFOSAA | | 4341.49 | 6.11 | | | | 20-150% | 86.8% | |
| | d5-N-EiFOSAA | | 3848.69 | 5.41 | | | | 20-150% | 77.0% | |
| | M7PFUdA | | 4274.51 | 6.01 | | | | 20-150% | 85.5% | |
| | MPFDoA | | 3222.09 | 4.53 | | | | 20-150% | 64.4% | |
| | M2PFTeDA | | 1020.33 | 1.43 | | | | 20-150% | 20.4% | |
| d3-N-MeFOA | | 408.97 | 0.575 | | | | 10-200% | 4.1% | Q | |
| d5-N-EiFOA | | 232.80 | 0.327 | | | | 10-200% | 2.3% | Q | |
| d7-N-MeFOSE | | 2746.67 | 3.86 | | | | 10-200% | 27.5% | | |
| d9-N-EiFOSE | | 1811.01 | 2.55 | | | | 10-200% | 18.1% | | |

Enthalpy Analytical

Job No.: 0722-741-1 PFAS by Isotope Dilution (non-potable water)

Brunswick County Public Utilities - NC Client Project: N/A Site: Northwest Water Plant

| | | | | | |
|---------------|------------------|---------------|------------------|------------------|--------|
| Enthalpy ID | 0722-741-002-1 | Prep Batch | EU13696 | Sample Vol (mL) | 279.16 |
| Sample Name | 071422-EO1 | Prep Date | 2022-07-18 14:56 | Extract Vol (mL) | 0.4 |
| Matrix | Aqueous | Analysis Date | 2022-07-19 22:35 | Split Factor | N/A |
| Sampling Date | 20220714 00:00 | Analyst | itbrooker | Method Code | WM-026 |
| Received Date | 2022-07-14 14:00 | Instrument | Sauron | Sample Type | Sample |

| | Compound | CAS | Extract Concentration ng/L | Sample Concentration ng/L | Formatted Result ng/L | LOD ng/L | LOQ ng/L | Recovery Limits | Recovery | Flags |
|-------------|--------------------|--------------|----------------------------|---------------------------|-----------------------|----------|----------|-----------------|----------|-------|
| Acids | PFBA | 375-22-4 | 2774.13 | 3.97 | 3.97 | 0.137 | 0.573 | | | |
| | PFPeA | 2706-90-3 | 7564.84 | 10.8 | 10.8 | 0.152 | 0.573 | | | |
| | PFHxA | 307-24-4 | 5790.46 | 8.30 | 8.30 | 0.173 | 0.573 | | | |
| | PFHpA | 375-85-9 | 2585.15 | 3.70 | 3.70 | 0.109 | 0.573 | | | |
| | PFOA | 335-67-1 | 4041.27 | 5.79 | 5.79 | 0.159 | 0.573 | | | |
| | PFNA | 375-95-1 | 553.40 | 0.793 | 0.793 | 0.0681 | 0.573 | | | |
| | PFDA | 335-76-2 | 357.92 | 0.513 | 0.513 | 0.0757 | 0.573 | | | J |
| | PFUnDA | 2058-94-8 | 122.04 | 0.175 | 0.175 | 0.166 | 0.573 | | | J |
| | PFDoDA | 307-55-1 | 21.87 | 0.0313 | 0.0313 | 0.181 | 0.573 | | | LB |
| | PFTriDA | 72629-94-8 | 12.78 | 0.0183 | 0.0183 | 0.135 | 0.573 | | | LB |
| PFTeDA | 376-06-7 | 6.83 | 0.00978 | 0.00978 | 0.195 | 0.573 | | | LB | |
| Sulfonates | PFBS | 375-73-5 | 3711.77 | 5.32 | 5.32 | 0.318 | 0.669 | | | |
| | PFPeS | 2706-91-4 | 575.35 | 0.824 | 0.824 | 0.184 | 0.540 | | | |
| | PFHxS | 355-46-4 | 3421.16 | 4.90 | 4.90 | 0.171 | 0.525 | | | |
| | PFHpS | 375-92-8 | 198.01 | 0.284 | 0.284 | 0.121 | 0.546 | | | J |
| | PFOS | 1763-23-1 | 7839.69 | 11.2 | 11.2 | 0.143 | 0.531 | | | |
| | PFNS | 68259-12-1 | ND | ND | ND | 0.0774 | 0.552 | | | U |
| | PFDS | 335-77-3 | ND | ND | ND | 0.172 | 0.552 | | | U |
| | 4:2 FTS | 757124-72-4 | ND | ND | ND | 0.106 | 0.537 | | | U |
| | 6:2 FTS | 27619-97-2 | 192.69 | 0.276 | 0.276 | 0.104 | 0.546 | | | J |
| | 8:2 FTS | 39108-34-4 | 13.68 | 0.0196 | 0.0196 | 0.153 | 0.549 | | | LB |
| Other | PFOSA | 754-91-6 | 34.76 | 0.0498 | 0.0498 | 0.116 | 0.573 | | | LB |
| | N-MeFOSAA | 2355-31-9 | 52.59 | 0.0754 | 0.0754 | 0.129 | 0.573 | | | LB |
| | N-EiFOSAA | 2991-50-6 | 32.12 | 0.0460 | 0.0460 | 0.0976 | 0.573 | | | LB |
| | HFPO-DA | 13252-13-6 | 4780.69 | 6.85 | 6.85 | 0.204 | 0.573 | | | |
| | PFMOAA | 674-13-5 | 17093.35 | 24.5 | 24.5 | 1.29 | 1.29 | | | |
| | PFMOPrA | 377-73-1 | ND | ND | ND | 0.215 | 0.573 | | | U |
| | PFO2HxA | 39492-88-1 | 4844.52 | 6.94 | 6.94 | 1.29 | 1.29 | | | |
| | PFO3OA | 39492-89-2 | ND | ND | ND | 1.29 | 1.29 | | | U |
| | PFO4DA | 39492-90-5 | ND | ND | ND | 1.36 | 1.36 | | | U |
| | Nafion Byproduct 1 | 29311-67-9 | 30.62 | 0.0439 | 0.0439 | 0.272 | 0.573 | | | L |
| | ADONA | 919005-14-4 | ND | ND | ND | 0.107 | 0.543 | | | U |
| | 9Cl-PF3OUds | 756426-58-1 | ND | ND | ND | 0.107 | 0.534 | | | U |
| | 11Cl-PF3OUds | 763051-92-9 | ND | ND | ND | 0.107 | 0.540 | | | U |
| | 10:2 FTS | 120226-60-0 | ND | ND | ND | 0.215 | 0.573 | | | U |
| | EVE Acid | 69087-46-3 | 2.34 | 0.00336 | 0.00336 | 1.29 | 1.29 | | | L |
| | FBSA | 30334-69-1 | 484.95 | 0.695 | 0.695 | 0.215 | 0.573 | | | |
| | Hydro-EVE Acid | 773804-62-9 | 208.07 | 0.298 | 0.298 | 1.29 | 1.29 | | | L |
| | Hydrolyzed PSDA | 2416366-19-1 | 8881.76 | 12.7 | 12.7 | 1.29 | 1.29 | | | |
| | Nafion Byproduct 2 | 749836-20-2 | 340.13 | 0.487 | 0.487 | 0.272 | 0.573 | | | J |
| | N-EiFOSA | 4151-50-2 | ND | ND | ND | 0.215 | 0.573 | | | U |
| N-EiFOSE | 1691-99-2 | ND | ND | ND | 6.45 | 6.45 | | | U | |
| NFDHA | 151772-58-6 | ND | ND | ND | 0.215 | 0.573 | | | U | |
| N-MeFOSA | 31506-32-8 | ND | ND | ND | 0.215 | 0.573 | | | U | |
| N-MeFOSE | 24448-09-7 | ND | ND | ND | 6.45 | 6.45 | | | U | |
| NVHOS | 1132933-86-8 | 1765.92 | 2.53 | 2.53 | 1.29 | 1.29 | | | | |
| PEPA | 267239-61-2 | 1746.87 | 2.50 | 2.50 | 1.29 | 1.29 | | | | |
| PFECA-G | 801212-59-9 | ND | ND | ND | 0.272 | 1.29 | | | U | |
| PFEESA | 113507-82-7 | ND | ND | ND | 0.215 | 0.573 | | | U | |
| PFHxDA | 67905-19-5 | 4.53 | 0.00649 | 0.00649 | 1.29 | 1.29 | | | L | |
| PFMObA | 863090-89-5 | ND | ND | ND | 1.29 | 1.29 | | | U | |
| PFO5DA | 39492-91-6 | ND | ND | ND | 1.36 | 1.36 | | | U | |
| PMPA | 13140-29-9 | 5600.89 | 8.03 | 8.03 | 1.29 | 1.29 | | | | |
| R-EVE | 2416366-22-6 | 13212.35 | 18.9 | 18.9 | 1.29 | 1.29 | | | | |
| R-PSDA | 2416366-18-0 | ND | ND | ND | 1.29 | 1.29 | | | U | |
| R-PSDCA | 241636-21-5 | 27.08 | 0.0388 | 0.0388 | 1.29 | 1.29 | | | L | |
| ES | MPFBA | | 5422.81 | 7.77 | | | | 20-150% | 108.5% | |
| | MSPFPeA | | 7313.04 | 10.5 | | | | 20-150% | 146.3% | |
| | M3PFBS | | 9230.15 | 13.2 | | | | 20-150% | 184.6% | Q |
| | M2-4:2 FTS | | 9322.61 | 13.4 | | | | 20-150% | 186.5% | Q |
| | MSPFHxA | | 4650.10 | 6.66 | | | | 20-150% | 93.0% | |
| | M3HFPO-DA | | 4708.27 | 6.75 | | | | 20-150% | 94.2% | |
| | M4PFHpA | | 4919.27 | 7.05 | | | | 20-150% | 98.4% | |
| | M3PFHxS | | 4841.44 | 6.94 | | | | 20-150% | 96.8% | |
| | M2-6:2 FTS | | 5789.58 | 8.30 | | | | 20-150% | 115.8% | |
| | M8PFOA | | 4880.96 | 6.98 | | | | 20-150% | 97.6% | |
| | M9PFNA | | 4872.43 | 6.98 | | | | 20-150% | 97.4% | |
| | M8PFOS | | 4692.29 | 6.72 | | | | 20-150% | 93.8% | |
| | M2-8:2 FTS | | 4752.50 | 6.81 | | | | 20-150% | 95.1% | |
| | M8FOSA-I | | 3769.18 | 5.40 | | | | 20-150% | 75.4% | |
| | M6PFDA | | 5429.95 | 7.78 | | | | 20-150% | 108.6% | |
| | d3-N-MeFOSAA | | 4863.17 | 6.97 | | | | 20-150% | 97.3% | |
| | d5-N-EiFOSAA | | 4668.78 | 6.69 | | | | 20-150% | 93.4% | |
| | M7PFUdA | | 5564.16 | 7.97 | | | | 20-150% | 111.3% | |
| | MPFDaA | | 5019.04 | 7.19 | | | | 20-150% | 100.4% | |
| | M2PFTeDA | | 4354.71 | 6.24 | | | | 20-150% | 87.1% | |
| d3-N-MeFOSA | | 584.05 | 0.837 | | | | 10-200% | 5.8% | Q | |
| d5-N-EiFOSA | | 560.56 | 0.803 | | | | 10-200% | 5.6% | Q | |
| d7-N-MeFOSE | | 5673.85 | 8.13 | | | | 10-200% | 56.7% | | |
| d9-N-EiFOSE | | 4879.54 | 6.99 | | | | 10-200% | 48.8% | | |

QC Data



Enthalpy Analytical

Job No.: 0722-741-1 PFAS by Isotope Dilution (non-potable water)

Brunswick County Public Utilities - NC Client Project: N/A Site: Northwest Water Plant

| | | | | | |
|---------------|---------------|---------------|------------------|------------------|--------|
| Enthalpy ID | MB_13696_PFAS | Prep Batch | EU13696 | Sample Vol (mL) | 250 |
| Sample Name | MB_13696_PFAS | Prep Date | 2022-07-18 14:56 | Extract Vol (mL) | 0.4 |
| Matrix | aqueous | Analysis Date | 2022-07-19 16:29 | Split Factor | N/A |
| Sampling Date | | Analyst | itbrooker | Method Code | WM-026 |
| Received Date | | Instrument | Sauron | Sample Type | Blank |

| | Compound | CAS | Extract Concentration ng/L | Sample Concentration ng/L | Formatted Result ng/L | LOD ng/L | LOQ ng/L | Recovery Limits | Recovery | Flags | |
|-------------|--------------------|--------------|----------------------------|---------------------------|-----------------------|----------|----------|-----------------|----------|-------|---|
| Acids | PFBA | 375-22-4 | ND | ND | ND | 0.153 | 0.640 | | | U | |
| | PFPeA | 2706-90-3 | ND | ND | ND | 0.170 | 0.640 | | | U | |
| | PFFhxA | 307-24-4 | 32.24 | 0.0516 | 0.0516 | 0.193 | 0.640 | | | L | |
| | PFFHpA | 375-85-9 | 11.22 | 0.0179 | 0.0179 | 0.122 | 0.640 | | | L | |
| | PFOA | 335-67-1 | 7.28 | 0.0116 | 0.0116 | 0.177 | 0.640 | | | L | |
| | PFNA | 375-95-1 | 2.54 | 0.00407 | 0.00407 | 0.0761 | 0.640 | | | L | |
| | PFDA | 335-76-2 | 5.96 | 0.00953 | 0.00953 | 0.0845 | 0.640 | | | L | |
| | PFUnDA | 2058-94-8 | 11.41 | 0.0182 | 0.0182 | 0.185 | 0.640 | | | L | |
| | PFDoDA | 307-55-1 | 22.28 | 0.0356 | 0.0356 | 0.202 | 0.640 | | | L | |
| | PFTrDA | 72629-94-8 | 62.89 | 0.101 | 0.101 | 0.151 | 0.640 | | | L | |
| | PFTeDA | 376-06-7 | 56.65 | 0.0906 | 0.0906 | 0.218 | 0.640 | | | L | |
| | Sulfonates | PFBS | 375-73-5 | ND | ND | ND | 0.355 | 0.747 | | | U |
| | | PFPeS | 2706-91-4 | ND | ND | ND | 0.206 | 0.603 | | | U |
| PFFhXS | | 355-46-4 | ND | ND | ND | 0.191 | 0.586 | | | U | |
| PFFHpS | | 375-92-8 | ND | ND | ND | 0.135 | 0.610 | | | U | |
| PFOS | | 1763-23-1 | 22.06 | 0.0353 | 0.0353 | 0.160 | 0.593 | | | L | |
| PFNS | | 68259-12-1 | ND | ND | ND | 0.0864 | 0.616 | | | U | |
| PFDS | | 335-77-3 | ND | ND | ND | 0.192 | 0.616 | | | U | |
| 4:2 FTS | | 757124-72-4 | ND | ND | ND | 0.118 | 0.600 | | | U | |
| 6:2 FTS | | 27619-97-2 | ND | ND | ND | 0.116 | 0.610 | | | U | |
| 8:2 FTS | | 39108-34-4 | 3.97 | 0.00635 | 0.00635 | 0.171 | 0.613 | | | L | |
| Other | | PFOSA | 754-91-6 | 37.22 | 0.0595 | 0.0595 | 0.130 | 0.640 | | | L |
| | N-MeFOSAA | 2355-31-9 | 12.18 | 0.0195 | 0.0195 | 0.144 | 0.640 | | | L | |
| | N-EiFOSAA | 2991-50-6 | 30.69 | 0.0491 | 0.0491 | 0.109 | 0.640 | | | L | |
| | HFPO-DA | 13252-13-6 | ND | ND | ND | 0.228 | 0.640 | | | U | |
| | PFMOAA | 674-13-5 | 129.00 | 0.206 | 0.206 | 1.44 | 1.44 | | | L | |
| | PFMOPrA | 377-73-1 | ND | ND | ND | 0.240 | 0.640 | | | U | |
| | PFO2HxA | 39492-88-1 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | PFO3OA | 39492-89-2 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | PFO4DA | 39492-90-5 | ND | ND | ND | 1.52 | 1.52 | | | U | |
| | Nafion Byproduct 1 | 29311-67-9 | ND | ND | ND | 0.304 | 0.640 | | | U | |
| | ADONA | 919005-14-4 | ND | ND | ND | 0.120 | 0.606 | | | U | |
| | 9Cl-PF3OUds | 756426-58-1 | ND | ND | ND | 0.120 | 0.596 | | | U | |
| | 11Cl-PF3OUds | 763051-92-9 | ND | ND | ND | 0.120 | 0.603 | | | U | |
| | 10:2 FTS | 120226-60-0 | 31.12 | 0.0498 | 0.0498 | 0.240 | 0.640 | | | L | |
| | EVE Acid | 69087-46-3 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | FBSA | 30334-69-1 | ND | ND | ND | 0.240 | 0.640 | | | U | |
| | Hydro-EVE Acid | 773804-62-9 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | Hydrolyzed PSDA | 2416366-19-1 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | Nafion Byproduct 2 | 749836-20-2 | ND | ND | ND | 0.304 | 0.640 | | | U | |
| | N-EiFOA | 4151-50-2 | 125.76 | 0.201 | 0.201 | 0.240 | 0.640 | | | L | |
| | N-EiFOSE | 1691-99-2 | 277.14 | 0.443 | 0.443 | 7.20 | 7.20 | | | L | |
| | NFDHA | 151772-58-6 | ND | ND | ND | 0.240 | 0.640 | | | U | |
| | N-MeFOA | 31506-32-8 | ND | ND | ND | 0.240 | 0.640 | | | U | |
| | N-MeFOSE | 24448-09-7 | 186.39 | 0.298 | 0.298 | 7.20 | 7.20 | | | L | |
| | NVHOS | 1132933-86-8 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | PEPA | 267239-61-2 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | PFECA-G | 801212-59-9 | ND | ND | ND | 0.304 | 1.44 | | | U | |
| | PFEESA | 113507-82-7 | ND | ND | ND | 0.240 | 0.640 | | | U | |
| | PFFhDA | 67905-19-5 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | PFFMOBA | 863090-89-5 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | PFO5DA | 39492-91-6 | ND | ND | ND | 1.52 | 1.52 | | | U | |
| | PMPA | 13140-29-9 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| | R-EVE | 2416366-22-6 | ND | ND | ND | 1.44 | 1.44 | | | U | |
| R-PSDA | 2416366-18-0 | ND | ND | ND | 1.44 | 1.44 | | | U | | |
| R-PSDCA | 241636-21-5 | ND | ND | ND | 1.44 | 1.44 | | | U | | |
| ES | MPFBA | | 4565.99 | 7.31 | | | | 20-150% | 91.3% | | |
| | MSPFPeA | | 4351.55 | 6.96 | | | | 20-150% | 87.0% | | |
| | M3PFBS | | 3914.88 | 6.26 | | | | 20-150% | 78.3% | | |
| | M2-4:2 FTS | | 4436.59 | 7.10 | | | | 20-150% | 88.7% | | |
| | MSPFFhxA | | 3351.99 | 5.36 | | | | 20-150% | 67.0% | | |
| | M3HFPO-DA | | 3374.55 | 5.40 | | | | 20-150% | 67.5% | | |
| | M4PFFHpA | | 3825.21 | 6.12 | | | | 20-150% | 76.5% | | |
| | M3PFFhXS | | 4763.98 | 7.62 | | | | 20-150% | 95.3% | | |
| | M2-6:2 FTS | | 5306.08 | 8.49 | | | | 20-150% | 106.1% | | |
| | M8PFOA | | 4629.18 | 7.41 | | | | 20-150% | 92.6% | | |
| | M9PFNA | | 4770.72 | 7.63 | | | | 20-150% | 95.4% | | |
| | M8PFOS | | 4838.30 | 7.74 | | | | 20-150% | 96.8% | | |
| | M2-8:2 FTS | | 4964.28 | 7.94 | | | | 20-150% | 99.3% | | |
| | M8FOSA-I | | 3582.18 | 5.73 | | | | 20-150% | 71.6% | | |
| | M6PFDA | | 5113.46 | 8.18 | | | | 20-150% | 102.3% | | |
| | d3-N-MeFOSAA | | 4618.08 | 7.39 | | | | 20-150% | 92.4% | | |
| | d5-N-EiFOSAA | | 4369.48 | 6.99 | | | | 20-150% | 87.4% | | |
| | M7PFUdA | | 4768.93 | 7.63 | | | | 20-150% | 95.4% | | |
| | MPFDaA | | 4700.83 | 7.52 | | | | 20-150% | 94.0% | | |
| | M2PFTeDA | | 2920.84 | 4.67 | | | | 20-150% | 58.4% | | |
| | d3-N-MeFOA | | 329.66 | 0.527 | | | | 10-200% | 3.3% | Q | |
| d5-N-EiFOA | | 344.77 | 0.552 | | | | 10-200% | 3.4% | Q | | |
| d7-N-MeFOSE | | 5731.38 | 9.17 | | | | 10-200% | 57.3% | | | |
| d9-N-EiFOSE | | 5533.61 | 8.85 | | | | 10-200% | 55.3% | | | |

Enthalpy Analytical

Job No.: 0722-741-1 PFAS by Isotope Dilution (non-potable water)

Brunswick County Public Utilities - NC Client Project: N/A Site: Northwest Water Plant

| | | | | | |
|---------------|----------------|---------------|------------------|------------------|---------|
| Enthalpy ID | OPR_13696_PFAS | Prep Batch | EU13696 | Sample Vol (mL) | 250 |
| Sample Name | OPR_13696_PFAS | Prep Date | 2022-07-18 14:56 | Extract Vol (mL) | 0.4 |
| Matrix | aqueous | Analysis Date | 2022-07-19 16:52 | Split Factor | N/A |
| Sampling Date | | Analyst | itbrooker | Method Code | WM-026 |
| Received Date | | Instrument | Sauron | Sample Type | Control |

| | Compound | CAS | Extract Concentration ng/L | Sample Concentration ng/L | Formatted Result ng/L | LOD ng/L | LOQ ng/L | Recovery Limits | Recovery | Flags |
|------------|--------------|-------------|----------------------------|---------------------------|-----------------------|----------|----------|-----------------|----------|-------|
| Acids | PFBA | 375-22-4 | 12349.92 | 19.8 | 19.8 | 0.153 | 0.640 | 73-129% | 98.8% | |
| | PFPeA | 2706-90-3 | 13187.10 | 21.1 | 21.1 | 0.170 | 0.640 | 72-129% | 105.5% | |
| | PFHxA | 307-24-4 | 13034.64 | 20.9 | 20.9 | 0.193 | 0.640 | 72-129% | 104.3% | |
| | PFHpA | 375-85-9 | 11637.82 | 18.6 | 18.6 | 0.122 | 0.640 | 72-130% | 93.1% | |
| | PFOA | 335-67-1 | 13762.40 | 22.0 | 22.0 | 0.177 | 0.640 | 71-133% | 110.1% | |
| | PFNA | 375-95-1 | 12096.52 | 19.4 | 19.4 | 0.0761 | 0.640 | 69-130% | 96.8% | |
| | PFDA | 335-76-2 | 11716.28 | 18.7 | 18.7 | 0.0845 | 0.640 | 71-129% | 93.7% | |
| | PFUnDA | 2058-94-8 | 12278.99 | 19.6 | 19.6 | 0.185 | 0.640 | 69-133% | 98.2% | |
| | PFDoDA | 307-55-1 | 12338.83 | 19.7 | 19.7 | 0.202 | 0.640 | 72-134% | 98.7% | |
| | PFTriDA | 72629-94-8 | 17834.50 | 28.5 | 28.5 | 0.151 | 0.640 | 65-144% | 142.7% | |
| | PFTeDA | 376-06-7 | 13190.99 | 21.1 | 21.1 | 0.218 | 0.640 | 71-132% | 105.5% | |
| Sulfonates | PFBS | 375-73-5 | 10801.10 | 17.3 | 17.3 | 0.355 | 0.747 | 72-134% | 97.4% | |
| | PFPeS | 2706-91-4 | 11114.26 | 17.8 | 17.8 | 0.206 | 0.603 | 71-127% | 94.5% | |
| | PFHxS | 355-46-4 | 11787.98 | 18.9 | 18.9 | 0.191 | 0.586 | 68-131% | 103.2% | |
| | PFHpS | 375-92-8 | 11837.73 | 18.9 | 18.9 | 0.135 | 0.610 | 69-134% | 99.4% | |
| | PFOS | 1763-23-1 | 11398.89 | 18.2 | 18.2 | 0.160 | 0.593 | 65-140% | 98.3% | |
| | PFNS | 68259-12-1 | 12441.52 | 19.9 | 19.9 | 0.0864 | 0.616 | 69-127% | 103.5% | |
| | PFDS | 335-77-3 | 11927.84 | 19.1 | 19.1 | 0.192 | 0.616 | 53-142% | 98.9% | |
| | 4:2 FTS | 757124-72-4 | 11247.32 | 18.0 | 18.0 | 0.118 | 0.600 | 63-143% | 96.0% | |
| | 6:2 FTS | 27619-97-2 | 12251.40 | 19.6 | 19.6 | 0.116 | 0.610 | 64-140% | 103.1% | |
| | 8:2 FTS | 39108-34-4 | 12584.51 | 20.1 | 20.1 | 0.171 | 0.613 | 67-138% | 104.9% | |
| Other | PFOSA | 754-91-6 | 12209.38 | 19.5 | 19.5 | 0.130 | 0.640 | 67-137% | 97.7% | |
| | N-MeFOSAA | 2355-31-9 | 12328.90 | 19.7 | 19.7 | 0.144 | 0.640 | 65-136% | 98.6% | |
| | N-EtFOSAA | 2991-50-6 | 13039.72 | 20.9 | 20.9 | 0.109 | 0.640 | 61-135% | 104.3% | |
| | HFPO-DA | 13252-13-6 | 10423.87 | 16.7 | 16.7 | 0.228 | 0.640 | 70-130% | 83.4% | |
| ES | MPFBA | | 5416.84 | 8.67 | | | | 20-150% | 108.3% | |
| | M5PFPeA | | 4824.60 | 7.72 | | | | 20-150% | 96.5% | |
| | M3PFBS | | 4566.16 | 7.31 | | | | 20-150% | 91.3% | |
| | M2-4:2 FTS | | 7862.04 | 12.6 | | | | 20-150% | 157.2% | Q |
| | M5PFHxA | | 6038.19 | 9.66 | | | | 20-150% | 120.8% | |
| | M3HFPO-DA | | 6314.13 | 10.1 | | | | 20-150% | 126.3% | |
| | M4PFHpA | | 5671.55 | 9.07 | | | | 20-150% | 113.4% | |
| | M3PFHxS | | 5574.84 | 8.92 | | | | 20-150% | 111.5% | |
| | M2-6:2 FTS | | 6358.93 | 10.2 | | | | 20-150% | 127.2% | |
| | M8PFOA | | 4967.00 | 7.95 | | | | 20-150% | 99.3% | |
| | M9PFNA | | 5547.46 | 8.88 | | | | 20-150% | 110.9% | |
| | M8PFOS | | 4888.03 | 7.82 | | | | 20-150% | 97.8% | |
| | M2-8:2 FTS | | 5584.82 | 8.94 | | | | 20-150% | 111.7% | |
| | M8FOSA-I | | 4196.99 | 6.72 | | | | 20-150% | 83.9% | |
| | M6PFDA | | 5313.59 | 8.50 | | | | 20-150% | 106.3% | |
| | d3-N-MeFOSAA | | 5152.07 | 8.24 | | | | 20-150% | 103.0% | |
| | d5-N-EtFOSAA | | 4630.18 | 7.41 | | | | 20-150% | 92.6% | |
| | M7PFUdA | | 5195.34 | 8.31 | | | | 20-150% | 103.9% | |
| MPFDoA | | 5304.38 | 8.49 | | | | 20-150% | 106.1% | | |
| | M2PFTeDA | | 3403.08 | 5.44 | | | | 20-150% | 68.1% | |

Narrative Summary



Enthalpy Analytical Narrative Summary

| | |
|------------|---|
| Company | Brunswick County Public Utilities - NC |
| Job No. | 0722-741-1 PFAS by Isotope Dilution (non-potable water) |
| Client ID. | N/A Site: Northwest Water Plant |

1. Custody

Megan Holden received the samples on July 14, 2022 at 2.7 °C after being relinquished by Brunswick County Public Utilities - NC. The samples were received in good condition.

Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Table 1 - Sample Inventory

| EU Lab Sample ID | Client Sample ID | Matrix |
|------------------|------------------|---------|
| 0722-741-001-1 | 071422-SO1 | Aqueous |
| 0722-741-002-1 | 071422-EO1 | Aqueous |

2. Methods and Analytes

A list of analytes of interest and corresponding methods of analysis is shown in Table 3. Abbreviations are defined in the listed Appendices.

Table 3 - Methods and Analytes

| EU Method | Analytes | Cleanup Method |
|-----------|---------------------|----------------|
| EU-047 | Brunswick PFAS List | ENVI-Carb |

3. Analysis

The samples were analyzed using Waters Acquity UPLC equipped with Xevo TQ MS (LC/MS/MS "Sauron").

For aqueous samples, the sample volume was measured gravimetrically by the laboratory, and spiked with Extraction Standard (ES). The sample was then mixed well and centrifuged, if needed. The samples were then extracted via SPE, and the extracts were cleaned up using ENVI-Carb.

Each final sample extract was transferred to an autosampler vial, spiked with Injection Standard (IS), and brought to a final volume of 400µL prior to analysis.

Samples that were run in more than one sequence and their comments are as follows:

071422-SO1, 071422-EO1

The samples were analyzed on more than one instrument sequence in order to include all of the analytes of interest and to meet method acceptance criteria.

4. Calibration

In the initial calibration, the reported analytes exhibited R² of ≥ 0.99.

Enthalpy Analytical Narrative Summary

| | |
|------------|---|
| Company | Brunswick County Public Utilities - NC |
| Job No. | 0722-741-1 PFAS by Isotope Dilution (non-potable water) |
| Client ID. | N/A Site: Northwest Water Plant |

4. Calibration, continued

The reported analytes in the calibration standards, continuing calibration (concal) and Initial Calibration Verification (ICV) met the 30% accuracy criterion for native analytes.

The Technical Director extended the method criteria for certain non-legacy analytes that do not have their own internal standard and exhibit observed variability during calibration.

5. QC Notes

The QC sample analyses passed all method criteria.

The samples were extracted within the 28-day from collection holding time and analyzed within the 28-day from extraction to analysis holding time required by the method.

6. Reporting Notes

This report provides all results including detections below LOD following client instruction.

Analyte(s) were detected in the method blank (MB) at less than 1/2 LOQ that may also be less than LOD. Any of these analyte(s) detected in the samples with less than 10 times the amount detected in MB were notated with a B qualifier and are reported with no adverse impact.

Some labeled extraction standards in the sample analyses fell outside the control limits for ES recovery, as denoted by the "Q" qualifier. The target analytes are quantified based on their ratio to their labeled standard analogs. As a result, low or high labeled standard recovery do not cause any change to ratios or contribute any additional error in the measurement of the target analytes. The data have been accepted and reported with no further actions.

EPA Draft M1633 recognizes that ES d3-N-MeFOSA and ES d5-N-EtFOSA may exhibit low recoveries. When detected at a signal-to-noise above 10:1 the ES peak area is used to quantify its respective target analyte using accepted isotope dilution principles. The data is reported without adverse impact.

The results presented in this report are representative of the samples as provided to the laboratory.

These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.

Enthalpy Analytical, LLC in Wilmington NC is accredited by the Louisiana Department of Environmental Quality to the 2009 TNI Standard under certificate number 05075.



General Reporting Notes – Data Qualifiers

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC - Wilmington, NC data reports, unless specifically noted otherwise.

General Data Qualifiers

- B – The analyte was found in the method blank, at a concentration that was at least 10% of the amount in the sample.
- Cxx – Two or more congeners co-elute. In EDDs, C denotes the lowest IUPAC congener in a co-elution group and additional co-eluters for the group ('xx') are shown with the number of the lowest IUPAC co-eluter.
- E – The reported concentration exceeds the calibration range (upper point of the calibration curve). For HRMS data, this condition does not imply additional measurement uncertainty. For LC-MS/MS data, these values should be considered as having measurement uncertainty higher than values within the calibration range.
- EDL – Estimated Detection Level: The EDL is unique to isotope dilution methods and reflects the conditions of analysis at the time of analysis, including the equipment used. Where the MDL is a static value, the EDL is a dynamic value.
- EMPC – Estimated Maximum Possible Concentration: EMPC is specific to Dioxin/Furan tests to indicate the determined ion-abundance ratio was outside the allowed theoretical range (usually due to being near the detection limit, although it can very rarely be caused by a co-eluting interference). The EMPC concentration is adjusted to reflect the value at the theoretical ion-abundance ratio.
- IR – The ion ratio between the primary and secondary ions was observed to be outside the method criteria. The analyte concentration may be inaccurate due to interference.
- J – The analyte has a concentration below the minimum calibration level (LOQ value) but greater than the LOD. These values should be considered as having measurement uncertainty higher than values within the calibration range
- L - Indicates that an analyte has a concentration below the Minimum Detection Limit (MDL). The reported concentration is not recommended for regulatory use as the analyte signal may have a signal-to-noise ratio less than the criteria deemed necessary to be considered a detected analyte.
- LOD – Limit of Detection: For reports conforming to the DOD ELAP QSM, this is the QSM-defined LOD. For reports conforming to TNI requirements (but not DOD ELAP QSM requirements), this value is the minimum detection limit (MDL). The LOD is adjusted for sample weight or volume.
- LOQ – Limit of Quantitation: For reports conforming to the DOD ELAP QSM, this is the QSM-defined LOQ. For reports conforming to TNI requirements (but not DOD ELAP QSM requirements), this value is the reporting limit (RL). The LOQ is adjusted for sample weight or volume.



General Reporting Notes – Data Qualifiers

- <LOD() – Analyte was not found at a concentration high enough to be reported as detected. It is reported as less than the LOD, and the LOD is given in the parentheses.
- <LOQ() – Analyte was not found at a concentration high enough to be reported as above the QSM-defined LOQ or TNI defined Reporting Limit. It is reported as less than the LOQ, and the LOQ is given in the parentheses.
- ND – Indicates a non-detect.
- NR – Indicates a value that is not reportable due to issues observed in sample preparation or analysis.
- PR – The associated congener(s) is(are) poorly resolved.
- QI – Indicates the presence of a quantitative interference.
- RL – Reporting Limit. Lowest reportable value. The level is higher than the MDL.
- SI – Denotes “Single Ion Mode” and is utilized for PCBs where the secondary ion trace has a significantly elevated noise level due to background PFK. Responses for such peaks are calculated using an EMPC approach based solely on the primary ion area(s) and may be considered estimates.
- U – The analyte was not detected.
- V / Q – The labeled standard recovery is not within method control limits.
- X – Indicates the result is from re-injection/repeat/second-column analysis.

Lab Identifiers/ Data Attributes

- AR – Indicates use of the archived portion of the sample extract.
- CU – Indicates a sample that required additional clean-up prior to HRMS injection/processing.
- D – Dilution Data. Result was obtained from the analysis of a dilution. The number that follows the “D” indicates the dilution factor.
- DE – Indicates a dilution performed with the addition of ES (Extraction Standard) solution.
- DUP – Designation for a duplicate sample.
- MS – Designation for a matrix spike.
- MSD – Designation for a matrix spike duplicate.
- R – Indicates a re-extraction of the sample.
- RJ – Indicates a reinjection of the sample extract.



General Reporting Notes – Data Qualifiers

- S – Indicates a sample split. The number that follows the “S” indicates the split factor.
- SAT – Indicates an analyte saturated the detector.

| PFAS Compound Acronym List | | |
|------------------------------------|--------------|---|
| Acronym | CAS # | Compound Name |
| Target Analytes | | |
| * Analyte is not accredited | | |
| PFBA | 375-22-4 | Perfluorobutanoic Acid |
| PFPeA | 2706-90-3 | Perfluoropentanoic Acid |
| PFHxA | 307-24-4 | Perfluorohexanoic Acid |
| PFHpA | 375-85-9 | Perfluoroheptanoic Acid |
| PFOA | 335-67-1 | Perfluorooctanoic Acid |
| PFNA | 375-95-1 | Perfluorononanoic Acid |
| PFDA | 335-76-2 | Perfluorodecanoic acid |
| PFUnA (PFUnDA) | 2058-94-8 | Perfluoroundecanoic acid |
| PFDoA (PFDoDA) | 307-55-1 | Perfluorododecanoic acid |
| PFTriA (PFTriA) | 72629-94-8 | Perfluorotridecanoic acid |
| PFTeDA (PFTA) | 376-06-7 | Perfluorotetradecanoic acid |
| PFBS | 375-73-5 | Perfluorobutane sulfonic acid |
| PFPeS | 2706-91-4 | Perfluoropentane sulfonic acid |
| PFHxS | 355-46-4 | Perfluorohexane sulfonic acid |
| PFHpS | 375-92-8 | Perfluoroheptane sulfonic acid |
| PFOS | 1763-23-1 | Perfluorooctane sulfonic acid |
| PFNS | 68259-12-1 | Perfluorononane sulfonic acid |
| PFDS | 335-77-3 | Perfluorodecane sulfonic acid |
| 4:2 FTS | 757124-72-4 | 4:2 fluorotelomer sulfonic acid |
| 6:2 FTS | 27619-97-2 | 6:2 fluorotelomer sulfonic acid |
| 8:2 FTS | 39108-34-4 | 8:2 fluorotelomer sulfonic acid |
| PFOSA (FOSA) | 754-91-6 | Perfluorooctane sulfonamide |
| N-MeFOSAA | 2355-31-9 | N-methyl perfluorooctane sulfonamido acetic acid |
| N-EtFOSAA | 2991-50-6 | N-ethyl perfluorooctane sulfonamido acetic acid |
| HFPO-DA | 13252-13-6 | 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid (Gen-X) |
| 11CI-PF3OUdS | 763051-92-9 | 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid |
| 9CI-PF3ONS | 756426-58-1 | 9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid |
| ADONA | 919005-14-4 | 4,8-dioxa-3H-perfluorononanoic acid |
| PFEESA | 113507-82-7 | Perfluoro(2-ethoxyethane)sulphonic acid |
| PFMOBA (PFMBA) | 863090-89-5 | Perfluoro-4-methoxybutanic acid |
| NFDHA | 151772-58-6 | Nonafluoro-3,6-dioxaheptanoic acid |
| PFMOPra (PFMPA) | 377-73-1 | Perfluoro-3-methoxypropanoic acid |
| * PFMOAA | 674-13-5 | Perfluoro-2-methoxyacetic acid |
| * PFO2HxA | 39492-88-1 | Perfluoro (3,5-dioxaheptanoic) acid |
| * PFO3OA | 39492-89-2 | Perfluoro (3,5,7-trioxaoctanoic) acid |
| * PFO4DA | 39492-90-5 | Perfluoro (3,5,7,9-tetraoxadecanoic) acid |
| * PFO5DA | 39492-91-6 | Perfluoro(3,5,7,9,11-pentaoxadodecanoic) acid |
| * Nafion Byproduct 1 | 29311-67-9 | Nafion Byproduct 1 |
| * Nafion Byproduct 2 | 749836-20-2 | Nafion Byproduct 2 |
| * PEPA | 267239-61-2 | Perfluoro-2-ethoxypropanoic acid |
| * PMPA | 13140-29-9 | Perfluoro-2-methoxypropanoic acid |
| * 10:2 FTS | 120226-60-0 | Fluorotelomer sulfonate 10:2 |
| * N-EtFOSA | 4151-50-2 | N-ethylperfluoro-1-octanesulfonamide |
| * N-EtFOSE | 1691-99-2 | 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol |
| * N-MeFOSA | 31506-32-8 | N-methylperfluoro-1-octanesulfonamide |
| * N-MeFOSE | 24448-09-7 | 2-(N-methylperfluoro-1-octanesulfonamido)-ethanol |
| * PFECA-G | 801212-59-9 | 4-(Heptafluoroisopropoxy)hexafluorobutanoic acid |
| * PFHxDA | 67905-19-5 | Perfluorohexadecanoic acid |
| * R-PSDA (Nafion Byproduct 4) | 2416366-18-0 | Perfluoro-4-(2-sulfoethoxy)pentanoic acid |

| PFAS Compound Acronym List | | |
|--|--------------|---|
| Acronym | CAS # | Compound Name |
| Target Analytes | | |
| * Analyte is not accredited | | |
| * Hydrolyzed PSDA (Nafion Byproduct 5) | 2416366-19-1 | 2-fluoro-2-[1,1,2,3,3,3-hexafluoro-2-(1,1,2-tetrafluoro-2-sulfoethoxy)propoxy]-acetic acid |
| * R-PSDCA (Nafion Byproduct 6) | 2416366-21-5 | 1,1,2,2-tetrafluoro-2-[1,2,2,3,3-pentafluoro-1-(trifluoromethyl)propoxy] ethanesulfonic acid |
| * EVE Acid | 69087-46-3 | 2,2,3,3-tetrafluoro-3-({1,1,1,2,3,3-hexafluoro-3-[(1,2,2-trifluoroethenyl)oxy]propan-2-yl)oxy}propionic acid |
| * FBSA | 30334-69-1 | Perfluorobutylsulfonamide |
| * Hydro-EVE Acid | 773804-62-9 | 2,2,3,3-Tetrafluoro-3-{{1,1,1,2,3,3-hexafluoro-3-(1,2,2,2-tetrafluoroethoxy)propan-2-yl}oxy}propanoic acid |
| * R-EVE Acid | 2416366-22-6 | 4-(2-carboxy-1,1,2,2-tetrafluoroethoxy)-2,2,3,3,4,5,5,5-octafluoro-pentanoic acid |
| * NVHOS | 1132933-86-8 | Perfluoroethoxysulfonic acid |
| * PFDoS | 79780-39-5 | Perfluorododecane sulfonic acid |
| * PFOA | 16517-11-6 | Perfluorooctadecanoic acid |
| * 3:3 FTCA | 356-02-5 | 2H,2H,3H,3H-Perfluorohexanoic acid |
| * 5:3 FTCA | 914637-49-3 | 2H,2H,3H,3H-Perfluorooctanoic acid |
| * 7:3 FTCA | 812-70-4 | 2H,2H,3H,3H-Perfluorodecanoic acid |
| * N-AP-FHxSA | 50598-28-2 | N-(3-(Dimethylamino)propyl)tridecafluoro-1-hexanesulfonamide |
| * N-CMAmP-6:2 FOSA | 34455-29-3 | N-(Carboxymethyl)-N,N-dimethyl-3-(((3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl)sulfonyl)amino)1-propanaminium |

Sample Custody



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