

 **ANALYTICAL REPORT****PREPARED FOR**

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JOB DESCRIPTION

RED-HILL [PFAS]

JOB NUMBER

380-78404-1

Eurofins Eaton Analytical Pomona

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Eaton Analytical, LLC Project Manager.

Compliance Statement

1. Laboratory is accredited in accordance with TNI 2016 Standards and ISO/IEC 17025:2017.
2. Laboratory certifies that the test results meet all TNI 2016 and ISO/IEC 17025:2017 requirements unless noted under the individual analysis
3. Test results relate only to the sample(s) tested.
4. This report shall not be reproduced except in full, without the written approval of the laboratory.
5. Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below. (DW, Water matrices)

Authorization



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Authorized for release by
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Definitions/Glossary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

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.

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
CFU	Colony Forming Unit
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)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
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)
TNTC	Too Numerous To Count

Case Narrative

Client: City & County of Honolulu
Project: RED-HILL [PFAS]

Job ID: 380-78404-1

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Job Narrative 380-78404-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 1/12/2024 9:25 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.8°C

PFAS

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

Detection Summary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-1

No Detections.

Client Sample ID: FB: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-2

No Detections.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-1

Date Collected: 01/10/24 08:30

Matrix: Drinking Water

Date Received: 01/12/24 09:25

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 20:54	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	112		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C6 PFDA	100		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C5 PFHxA	109		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C4 PFHpA	107		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C8 PFOA	105		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C9 PFNA	104		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C7 PFUnA	98		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C2 PFDoA	92		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C4 PFBA	104		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C5 PFPeA	107		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C3 PFBS	99		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C3 PFHxS	109		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C8 PFOS	101		50 - 200	01/14/24 13:41	01/15/24 20:54	1

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Client Sample Results

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-1

Date Collected: 01/10/24 08:30

Matrix: Drinking Water

Date Received: 01/12/24 09:25

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2-4:2-FTS	98		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C2-6:2-FTS	96		50 - 200	01/14/24 13:41	01/15/24 20:54	1
13C2-8:2-FTS	98		50 - 200	01/14/24 13:41	01/15/24 20:54	1

Method: EPA 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:31	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac		
d5-NEtFOSAA	107		70 - 130	01/15/24 16:19	01/16/24 16:31	1		
13C2 PFHxA	116		70 - 130	01/15/24 16:19	01/16/24 16:31	1		
13C2 PFDA	113		70 - 130	01/15/24 16:19	01/16/24 16:31	1		
13C3-GenX	108		70 - 130	01/15/24 16:19	01/16/24 16:31	1		

Client Sample ID: FB: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-2

Date Collected: 01/10/24 08:30

Matrix: Water

Date Received: 01/12/24 09:25

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1

Eurofins Eaton Analytical Pomona

Client Sample Results

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Client Sample ID: FB: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-2

Date Collected: 01/10/24 08:30

Matrix: Water

Date Received: 01/12/24 09:25

Method: EPA 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		01/14/24 13:41	01/15/24 21:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	102		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C6 PFDA	100		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C5 PFHxA	105		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C4 PFHpA	106		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C8 PFOA	105		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C9 PFNA	100		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C7 PFUnA	97		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C2 PFDoA	95		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C4 PFBA	104		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C5 PFPeA	106		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C3 PFBS	98		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C3 PFHxS	107		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C8 PFOS	100		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C2-4:2-FTS	106		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C2-6:2-FTS	97		50 - 200	01/14/24 13:41	01/15/24 21:03	1
13C2-8:2-FTS	96		50 - 200	01/14/24 13:41	01/15/24 21:03	1

Method: EPA 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1

Eurofins Eaton Analytical Pomona

Client Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Client Sample ID: FB: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-2

Date Collected: 01/10/24 08:30

Matrix: Water

Date Received: 01/12/24 09:25

Method: EPA 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/15/24 16:19	01/16/24 18:21	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	103		70 - 130			01/15/24 16:19	01/16/24 18:21	1
13C2 PFHxA	121		70 - 130			01/15/24 16:19	01/16/24 18:21	1
13C2 PFDA	117		70 - 130			01/15/24 16:19	01/16/24 18:21	1
13C3-GenX	109		70 - 130			01/15/24 16:19	01/16/24 18:21	1

Surrogate Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-78404-1	AIEA WELLS PUMPS 1&2 (260)	107	116	113	108
380-78404-1 MS	AIEA WELLS PUMPS 1&2 (260) (#2)	104	120	117	116
380-78404-1 MSD	AIEA WELLS PUMPS 1&2 (260) (#2)	100	118	110	114

Surrogate Legend

d5NEFOS = d5-NEtFOSAA
 PFHxA = 13C2 PFHxA
 PFDA = 13C2 PFDA
 GenX = 13C3-GenX

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-78404-2	FB: AIEA WELLS PUMPS 1&2 (103	121	117	109
LCS 380-71666/18-A	Lab Control Sample	95	104	102	98
MBL 380-71666/16-A	Method Blank	91	102	104	95
MRL 380-71666/17-A	Lab Control Sample	90	98	101	95

Surrogate Legend

d5NEFOS = d5-NEtFOSAA
 PFHxA = 13C2 PFHxA
 PFDA = 13C2 PFDA
 GenX = 13C3-GenX

Isotope Dilution Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Matrix: Drinking Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (50-200)	C6PFDA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	13C7PUA (50-200)	PFDaA (50-200)
380-78404-1	AIEA WELLS PUMPS 1&2 (260)	112	100	109	107	105	104	98	92

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (50-200)	PFPeA (50-200)	C3PFBS (50-200)	C3PFHS (50-200)	C8PFOS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)
380-78404-1	AIEA WELLS PUMPS 1&2 (260)	104	107	99	109	101	98	96	98

Surrogate Legend

- HFPODA = 13C3 HFPO-DA
- C6PFDA = 13C6 PFDA
- 13C5PHA = 13C5 PFHxA
- C4PFHA = 13C4 PFHpA
- C8PFOA = 13C8 PFOA
- C9PFNA = 13C9 PFNA
- 13C7PUA = 13C7 PFUnA
- PFDaA = 13C2 PFDaA
- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- C3PFBS = 13C3 PFBS
- C3PFHS = 13C3 PFHxS
- C8PFOS = 13C8 PFOS
- 42FTS = 13C2-4:2-FTS
- 62FTS = 13C2-6:2-FTS
- 82FTS = 13C2-8:2-FTS

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (50-200)	C6PFDA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	13C7PUA (50-200)	PFDaA (50-200)
380-78391-B-4-A LMS	Matrix Spike	107	100	106	106	105	99	95	94
380-78391-C-4-A LMSD	Matrix Spike Duplicate	91	90	91	91	96	89	84	82
380-78404-2	FB: AIEA WELLS PUMPS 1&2 (260) (#2)	102	100	105	106	105	100	97	95
LCS 380-71537/23-A	Lab Control Sample	107	104	108	106	109	108	99	98
MBL 380-71537/21-A	Method Blank	92	95	99	99	98	93	90	87
MRL 380-71537/22-A	Lab Control Sample	98	88	100	98	98	93	91	87

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (50-200)	PFPeA (50-200)	C3PFBS (50-200)	C3PFHS (50-200)	C8PFOS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)
380-78391-B-4-A LMS	Matrix Spike	100	131	100	101	103	103	96	98
380-78391-C-4-A LMSD	Matrix Spike Duplicate	98	138	93	95	95	109	101	93
380-78404-2	FB: AIEA WELLS PUMPS 1&2 (260) (#2)	104	106	98	107	100	106	97	96
LCS 380-71537/23-A	Lab Control Sample	104	106	101	104	100	109	101	103
MBL 380-71537/21-A	Method Blank	94	94	95	102	96	102	96	88
MRL 380-71537/22-A	Lab Control Sample	101	101	92	92	94	102	93	97

Surrogate Legend

- HFPODA = 13C3 HFPO-DA
- C6PFDA = 13C6 PFDA

Isotope Dilution Summary

Job ID: 380-78404-1

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
13C7PUA = 13C7 PFUnA
PFDoA = 13C2 PFDoA
PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
42FTS = 13C2-4:2-FTS
62FTS = 13C2-6:2-FTS
82FTS = 13C2-8:2-FTS

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water

Lab Sample ID: MBL 380-71537/21-A
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71537

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.25		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0	ng/L		01/14/24 13:41	01/15/24 18:02	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C6 PFDA	95		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C5 PFHxA	99		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C4 PFHpA	99		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C8 PFOA	98		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C9 PFNA	93		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C7 PFUnA	90		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C2 PFDoA	87		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C4 PFBA	94		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C5 PFPeA	94		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C3 PFBS	95		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C3 PFHxS	102		50 - 200	01/14/24 13:41	01/15/24 18:02	1

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: MBL 380-71537/21-A
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71537

Isotope Dilution	MBL MBL		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 PFOS	96		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C2-4:2-FTS	102		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C2-6:2-FTS	96		50 - 200	01/14/24 13:41	01/15/24 18:02	1
13C2-8:2-FTS	88		50 - 200	01/14/24 13:41	01/15/24 18:02	1

Lab Sample ID: LCS 380-71537/23-A
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71537

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	60.1	63.8		ng/L		106	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.1	63.1		ng/L		105	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.1	62.3		ng/L		104	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.1	64.1		ng/L		107	70 - 130
Perfluorobutanesulfonic acid (PFBS)	60.1	64.5		ng/L		107	70 - 130
Perfluorodecanoic acid (PFDA)	60.1	61.8		ng/L		103	70 - 130
Perfluorododecanoic acid (PFDoA)	60.1	62.7		ng/L		104	70 - 130
Perfluoroheptanoic acid (PFHpA)	60.1	59.6		ng/L		99	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	60.1	58.5		ng/L		97	70 - 130
Perfluorohexanoic acid (PFHxA)	60.1	61.7		ng/L		103	70 - 130
Perfluorononanoic acid (PFNA)	60.1	62.3		ng/L		104	70 - 130
Perfluorooctanesulfonic acid (PFOS)	60.1	58.4		ng/L		97	70 - 130
Perfluorooctanoic acid (PFOA)	60.1	59.4		ng/L		99	70 - 130
Perfluoroundecanoic acid (PFUnA)	60.1	62.6		ng/L		104	70 - 130
Perfluorobutanoic acid (PFBA)	60.1	60.9		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.1	57.9		ng/L		96	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.1	62.3		ng/L		104	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.1	60.5		ng/L		101	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.1	66.8		ng/L		111	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.1	61.7		ng/L		103	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.1	60.1		ng/L		100	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.1	60.1		ng/L		100	70 - 130
Perfluoropentanoic acid (PFPeA)	60.1	64.3		ng/L		107	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.1	61.2		ng/L		102	70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: LCS 380-71537/23-A
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71537

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanesulfonic acid (PFPeS)	60.1	59.4		ng/L		99	70 - 130
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C3 HFPO-DA	107		50 - 200				
13C6 PFDA	104		50 - 200				
13C5 PFHxA	108		50 - 200				
13C4 PFHpA	106		50 - 200				
13C8 PFOA	109		50 - 200				
13C9 PFNA	108		50 - 200				
13C7 PFUnA	99		50 - 200				
13C2 PFDoA	98		50 - 200				
13C4 PFBA	104		50 - 200				
13C5 PFPeA	106		50 - 200				
13C3 PFBS	101		50 - 200				
13C3 PFHxS	104		50 - 200				
13C8 PFOS	100		50 - 200				
13C2-4:2-FTS	109		50 - 200				
13C2-6:2-FTS	101		50 - 200				
13C2-8:2-FTS	103		50 - 200				

Lab Sample ID: MRL 380-71537/22-A
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71537

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	2.21	J	ng/L		110	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.16	J	ng/L		108	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.29	J	ng/L		114	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.14	J	ng/L		107	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	2.40	J	ng/L		120	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.43	J	ng/L		121	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.20	J	ng/L		110	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.32	J	ng/L		116	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.29	J	ng/L		114	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.04	J	ng/L		102	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.25	J	ng/L		112	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.31	J	ng/L		115	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.46	J	ng/L		123	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.14	J	ng/L		107	50 - 150
Perfluorobutanoic acid (PFBA)	2.00	2.26	J	ng/L		113	50 - 150

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: MRL 380-71537/22-A
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71537

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.27	J	ng/L		113	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.59	J	ng/L		129	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.31	J	ng/L		115	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	2.39	J	ng/L		119	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	2.00	2.22	J	ng/L		111	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.19	J	ng/L		109	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	2.02	J	ng/L		101	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.39	J	ng/L		119	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	2.19	J	ng/L		109	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	2.28	J	ng/L		114	50 - 150

Isotope Dilution	MRL %Recovery	MRL Qualifier	MRL Limits
13C3 HFPO-DA	98		50 - 200
13C6 PFDA	88		50 - 200
13C5 PFHxA	100		50 - 200
13C4 PFHpA	98		50 - 200
13C8 PFOA	98		50 - 200
13C9 PFNA	93		50 - 200
13C7 PFUnA	91		50 - 200
13C2 PFDoA	87		50 - 200
13C4 PFBA	101		50 - 200
13C5 PFPeA	101		50 - 200
13C3 PFBS	92		50 - 200
13C3 PFHxS	92		50 - 200
13C8 PFOS	94		50 - 200
13C2-4:2-FTS	102		50 - 200
13C2-6:2-FTS	93		50 - 200
13C2-8:2-FTS	97		50 - 200

Lab Sample ID: 380-78391-B-4-A LMS
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71537

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.01	1.99	J	ng/L		99	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.01	1.96	J	ng/L		98	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.01	2.07		ng/L		103	50 - 150

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: 380-78391-B-4-A LMS
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71537

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide	<2.0		2.01	2.18		ng/L		108	50 - 150
Dimer Acid (HFPO-DA/GenX)									
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.01	2.54		ng/L		126	50 - 150
Perfluorodecanoic acid (PFDA)	<2.0		2.01	2.11		ng/L		105	50 - 150
Perfluorododecanoic acid (PFDoA)	<2.0		2.01	2.23		ng/L		111	50 - 150
Perfluoroheptanoic acid (PFHpA)	<2.0		2.01	2.15		ng/L		107	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.01	2.40		ng/L		119	50 - 150
Perfluorohexanoic acid (PFHxA)	<2.0		2.01	2.17		ng/L		108	50 - 150
Perfluorononanoic acid (PFNA)	<2.0		2.01	2.24		ng/L		112	50 - 150
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.01	2.86		ng/L		103	50 - 150
Perfluorooctanoic acid (PFOA)	<2.0		2.01	2.20		ng/L		109	50 - 150
Perfluoroundecanoic acid (PFUnA)	<2.0		2.01	2.09		ng/L		104	50 - 150
Perfluorobutanoic acid (PFBA)	<2.0		2.01	2.31		ng/L		115	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.01	2.19		ng/L		109	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.01	2.49		ng/L		124	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.01	2.30		ng/L		114	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.01	2.25		ng/L		112	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.01	2.08		ng/L		103	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.01	2.50		ng/L		124	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.01	2.08		ng/L		103	50 - 150
Perfluoropentanoic acid (PFPeA)	<2.0		2.01	2.22		ng/L		110	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.01	2.10		ng/L		104	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.01	2.17		ng/L		108	50 - 150

Isotope Dilution	LMS LMS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	107		50 - 200
13C6 PFDA	100		50 - 200
13C5 PFHxA	106		50 - 200
13C4 PFHpA	106		50 - 200
13C8 PFOA	105		50 - 200
13C9 PFNA	99		50 - 200
13C7 PFUnA	95		50 - 200
13C2 PFDoA	94		50 - 200
13C4 PFBA	100		50 - 200
13C5 PFPeA	131		50 - 200
13C3 PFBS	100		50 - 200
13C3 PFHxS	101		50 - 200
13C8 PFOS	103		50 - 200

QC Sample Results

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Lab Sample ID: 380-78391-B-4-A LMS
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 71537

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>LMS LMS Qualifier</i>	<i>Limits</i>
13C2-4:2-FTS	103		50 - 200
13C2-6:2-FTS	96		50 - 200
13C2-8:2-FTS	98		50 - 200

Lab Sample ID: 380-78391-C-4-A LMSD
Matrix: Water
Analysis Batch: 71638

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 71537

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>LMSD Result</i>	<i>LMSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.00	2.07		ng/L		103	50 - 150	4	50
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.00	2.13		ng/L		106	50 - 150	8	50
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.00	2.11		ng/L		105	50 - 150	2	50
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.00	2.20		ng/L		110	50 - 150	1	50
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.00	2.59		ng/L		129	50 - 150	2	50
Perfluorodecanoic acid (PFDA)	<2.0		2.00	2.12		ng/L		106	50 - 150	1	50
Perfluorododecanoic acid (PFDoA)	<2.0		2.00	2.17		ng/L		108	50 - 150	3	50
Perfluoroheptanoic acid (PFHpA)	<2.0		2.00	2.16		ng/L		108	50 - 150	1	50
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.00	2.46		ng/L		123	50 - 150	2	50
Perfluorohexanoic acid (PFHxA)	<2.0		2.00	2.13		ng/L		106	50 - 150	2	50
Perfluorononanoic acid (PFNA)	<2.0		2.00	2.36		ng/L		118	50 - 150	5	50
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.00	2.93		ng/L		106	50 - 150	2	50
Perfluorooctanoic acid (PFOA)	<2.0		2.00	2.35		ng/L		117	50 - 150	7	50
Perfluoroundecanoic acid (PFUnA)	<2.0		2.00	2.14		ng/L		107	50 - 150	2	50
Perfluorobutanoic acid (PFBA)	<2.0		2.00	2.32		ng/L		116	50 - 150	0	50
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.00	2.38		ng/L		119	50 - 150	9	50
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.00	2.16		ng/L		108	50 - 150	14	50
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.00	2.43		ng/L		121	50 - 150	5	50
Nonfluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.00	2.35		ng/L		117	50 - 150	4	50
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.00	2.15		ng/L		108	50 - 150	4	50
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.00	2.72		ng/L		136	50 - 150	8	50
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.00	2.12		ng/L		106	50 - 150	2	50
Perfluoropentanoic acid (PFPeA)	<2.0		2.00	2.28		ng/L		114	50 - 150	3	50
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.00	2.22		ng/L		111	50 - 150	6	50
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.00	2.16		ng/L		108	50 - 150	1	50

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 533 - Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water (Continued)

Isotope Dilution	LMSD LMSD		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	91		50 - 200
13C6 PFDA	90		50 - 200
13C5 PFHxA	91		50 - 200
13C4 PFHpA	91		50 - 200
13C8 PFOA	96		50 - 200
13C9 PFNA	89		50 - 200
13C7 PFUnA	84		50 - 200
13C2 PFDoA	82		50 - 200
13C4 PFBA	98		50 - 200
13C5 PFPeA	138		50 - 200
13C3 PFBS	93		50 - 200
13C3 PFHxS	95		50 - 200
13C8 PFOS	95		50 - 200
13C2-4:2-FTS	109		50 - 200
13C2-6:2-FTS	101		50 - 200
13C2-8:2-FTS	93		50 - 200

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MBL 380-71666/16-A
Matrix: Water
Analysis Batch: 71752

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71666

Analyte	MBL MBL		RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		01/15/24 16:19	01/16/24 16:02	1
Surrogate	MBL MBL		Limits			Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier						
d5-NEtFOSAA	91		70 - 130			01/15/24 16:19	01/16/24 16:02	1
13C2 PFHxA	102		70 - 130			01/15/24 16:19	01/16/24 16:02	1
13C2 PFDA	104		70 - 130			01/15/24 16:19	01/16/24 16:02	1

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: MBL 380-71666/16-A
Matrix: Water
Analysis Batch: 71752

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 71666

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C3-GenX	95		70 - 130	01/15/24 16:19	01/16/24 16:02	1

Lab Sample ID: LCS 380-71666/18-A
Matrix: Water
Analysis Batch: 71752

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71666

<i>Analyte</i>	<i>Spike Added</i>	<i>LCS Result</i>	<i>LCS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	50.0	46.8		ng/L		94	70 - 130
Perfluorooctanesulfonic acid (PFOS)	50.0	52.6		ng/L		105	70 - 130
Perfluoroundecanoic acid (PFUnA)	50.0	50.1		ng/L		100	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	50.0	51.1		ng/L		102	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	50.0	49.4		ng/L		99	70 - 130
Perfluorohexanoic acid (PFHxA)	50.0	50.6		ng/L		101	70 - 130
Perfluorododecanoic acid (PFDoA)	50.0	48.7		ng/L		97	70 - 130
Perfluorooctanoic acid (PFOA)	50.0	50.8		ng/L		102	70 - 130
Perfluorodecanoic acid (PFDA)	50.0	49.9		ng/L		100	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	50.0	53.3		ng/L		107	70 - 130
Perfluorobutanesulfonic acid (PFBS)	50.0	49.8		ng/L		100	70 - 130
Perfluoroheptanoic acid (PFHpA)	50.0	49.7		ng/L		99	70 - 130
Perfluorononanoic acid (PFNA)	50.0	49.4		ng/L		99	70 - 130
Perfluorotetradecanoic acid (PFTA)	50.0	46.5		ng/L		93	70 - 130
Perfluorotridecanoic acid (PFTrDA)	50.0	56.2		ng/L		112	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	50.0	54.4		ng/L		109	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	50.0	51.4		ng/L		103	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	50.0	49.1		ng/L		98	70 - 130

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
d5-NEtFOSAA	95		70 - 130
13C2 PFHxA	104		70 - 130
13C2 PFDA	102		70 - 130
13C3-GenX	98		70 - 130

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: MRL 380-71666/17-A
Matrix: Water
Analysis Batch: 71752

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 71666

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	1.84	J	ng/L		92	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.22	J	ng/L		111	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.04	J	ng/L		102	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.07	J	ng/L		104	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.04	J	ng/L		102	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.12	J	ng/L		106	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.11	J	ng/L		105	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.19	J	ng/L		109	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.03	J	ng/L		101	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.13	J	ng/L		106	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	1.80	J	ng/L		90	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.13	J	ng/L		107	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.24	J	ng/L		112	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	1.97	J	ng/L		99	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	2.35	J	ng/L		118	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.22	J	ng/L		111	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	2.10	J	ng/L		105	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.15	J	ng/L		108	50 - 150

Surrogate	MRL %Recovery	MRL Qualifier	MRL Limits
d5-NEtFOSAA	90		70 - 130
13C2 PFHxA	98		70 - 130
13C2 PFDA	101		70 - 130
13C3-GenX	95		70 - 130

Lab Sample ID: 380-78404-1 MS
Matrix: Drinking Water
Analysis Batch: 71752

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) (#2)
Prep Type: Total/NA
Prep Batch: 71666

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		50.1	48.9		ng/L		98	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		50.1	51.4		ng/L		103	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		50.1	51.3		ng/L		102	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.1	53.2		ng/L		106	70 - 130

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: 380-78404-1 MS
Matrix: Drinking Water
Analysis Batch: 71752

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) (#2)
Prep Type: Total/NA
Prep Batch: 71666

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.1	49.9		ng/L		100	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		50.1	53.9		ng/L		106	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		50.1	49.0		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		50.1	52.2		ng/L		103	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		50.1	52.8		ng/L		105	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		50.1	54.2		ng/L		107	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		50.1	50.0		ng/L		99	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		50.1	52.6		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		50.1	51.1		ng/L		102	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		50.1	46.0		ng/L		92	70 - 130
Perfluorotridecanoic acid (PFTrDA)	<2.0		50.1	53.1		ng/L		106	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		50.1	54.4		ng/L		109	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		50.1	51.1		ng/L		102	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		50.1	51.7		ng/L		103	70 - 130

Surrogate	MS %Recovery	MS Qualifier	MS Limits
d5-NEtFOSAA	104		70 - 130
13C2 PFHxA	120		70 - 130
13C2 PFDA	117		70 - 130
13C3-GenX	116		70 - 130

Lab Sample ID: 380-78404-1 MSD
Matrix: Drinking Water
Analysis Batch: 71752

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) (#2)
Prep Type: Total/NA
Prep Batch: 71666

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		50.2	47.7		ng/L		95	70 - 130	3	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		50.2	52.3		ng/L		104	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)	<2.0		50.2	50.4		ng/L		100	70 - 130	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.2	52.5		ng/L		105	70 - 130	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.2	48.9		ng/L		97	70 - 130	2	30
Perfluorohexanoic acid (PFHxA)	<2.0		50.2	53.4		ng/L		105	70 - 130	1	30
Perfluorododecanoic acid (PFDoA)	<2.0		50.2	49.6		ng/L		99	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	<2.0		50.2	51.8		ng/L		102	70 - 130	1	30
Perfluorodecanoic acid (PFDA)	<2.0		50.2	51.8		ng/L		103	70 - 130	2	30

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method: 537.1 - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: 380-78404-1 MSD

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) (#2)

Matrix: Drinking Water

Prep Type: Total/NA

Analysis Batch: 71752

Prep Batch: 71666

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		Limit
Perfluorohexanesulfonic acid (PFHxS)	<2.0		50.2	53.4		ng/L		105	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		50.2	52.8		ng/L		104	70 - 130	5	30
Perfluoroheptanoic acid (PFHpA)	<2.0		50.2	51.7		ng/L		103	70 - 130	2	30
Perfluorononanoic acid (PFNA)	<2.0		50.2	53.1		ng/L		106	70 - 130	4	30
Perfluorotetradecanoic acid (PFTA)	<2.0		50.2	47.7		ng/L		95	70 - 130	4	30
Perfluorotridecanoic acid (PFTrDA)	<2.0		50.2	54.1		ng/L		108	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		50.2	53.2		ng/L		106	70 - 130	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		50.2	50.9		ng/L		101	70 - 130	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		50.2	51.5		ng/L		103	70 - 130	0	30
Surrogate		MSD	MSD								
		%Recovery	Qualifier	Limits							
d5-NEtFOSAA		100		70 - 130							
13C2 PFHxA		118		70 - 130							
13C2 PFDA		110		70 - 130							
13C3-GenX		114		70 - 130							

QC Association Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

LCMS

Prep Batch: 71537

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-78404-1	AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Drinking Water	533	
380-78404-2	FB: AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Water	533	
MBL 380-71537/21-A	Method Blank	Total/NA	Water	533	
LCS 380-71537/23-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-71537/22-A	Lab Control Sample	Total/NA	Water	533	
380-78391-B-4-A LMS	Matrix Spike	Total/NA	Water	533	
380-78391-C-4-A LMSD	Matrix Spike Duplicate	Total/NA	Water	533	

Analysis Batch: 71638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-78404-1	AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Drinking Water	533	71537
380-78404-2	FB: AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Water	533	71537
MBL 380-71537/21-A	Method Blank	Total/NA	Water	533	71537
LCS 380-71537/23-A	Lab Control Sample	Total/NA	Water	533	71537
MRL 380-71537/22-A	Lab Control Sample	Total/NA	Water	533	71537
380-78391-B-4-A LMS	Matrix Spike	Total/NA	Water	533	71537
380-78391-C-4-A LMSD	Matrix Spike Duplicate	Total/NA	Water	533	71537

Prep Batch: 71666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-78404-1	AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Drinking Water	537.1 DW	
380-78404-2	FB: AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Water	537.1 DW	
MBL 380-71666/16-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-71666/18-A	Lab Control Sample	Total/NA	Water	537.1 DW	
MRL 380-71666/17-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-78404-1 MS	AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Drinking Water	537.1 DW	
380-78404-1 MSD	AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Drinking Water	537.1 DW	

Analysis Batch: 71752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-78404-1	AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Drinking Water	537.1	71666
380-78404-2	FB: AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Water	537.1	71666
MBL 380-71666/16-A	Method Blank	Total/NA	Water	537.1	71666
LCS 380-71666/18-A	Lab Control Sample	Total/NA	Water	537.1	71666
MRL 380-71666/17-A	Lab Control Sample	Total/NA	Water	537.1	71666
380-78404-1 MS	AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Drinking Water	537.1	71666
380-78404-1 MSD	AIEA WELLS PUMPS 1&2 (260) (#2)	Total/NA	Drinking Water	537.1	71666

Lab Chronicle

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Client Sample ID: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-1

Date Collected: 01/10/24 08:30

Matrix: Drinking Water

Date Received: 01/12/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			71537	T2EP	EA POM	01/14/24 13:41
Total/NA	Analysis	533		1	71638	SZ9R	EA POM	01/15/24 20:54
Total/NA	Prep	537.1 DW			71666	A5GB	EA POM	01/15/24 16:19
Total/NA	Analysis	537.1		1	71752	R6YA	EA POM	01/16/24 16:31

Client Sample ID: FB: AIEA WELLS PUMPS 1&2 (260) (#2)

Lab Sample ID: 380-78404-2

Date Collected: 01/10/24 08:30

Matrix: Water

Date Received: 01/12/24 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			71537	T2EP	EA POM	01/14/24 13:41
Total/NA	Analysis	533		1	71638	SZ9R	EA POM	01/15/24 21:03
Total/NA	Prep	537.1 DW			71666	A5GB	EA POM	01/15/24 16:19
Total/NA	Analysis	537.1		1	71752	R6YA	EA POM	01/16/24 18:21

Laboratory References:

EA POM = Eurofins Eaton Analytical Pomona, 941 Corporate Center Drive, Pomona, CA 91768-2642, TEL (626)386-1100



Accreditation/Certification Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Laboratory: Eurofins Eaton Analytical Pomona

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
533	533	Drinking Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
533	533	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
533	533	Drinking Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
533	533	Drinking Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)
533	533	Drinking Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
533	533	Drinking Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
533	533	Drinking Water	Perfluorobutanoic acid (PFBA)
533	533	Drinking Water	Perfluoroheptanesulfonic acid (PFHpS)
533	533	Drinking Water	Perfluoropentanesulfonic acid (PFPeS)
533	533	Drinking Water	Perfluoropentanoic acid (PFPeA)
533	533	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
533	533	Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
533	533	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
533	533	Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
533	533	Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)
533	533	Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
533	533	Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
533	533	Water	Perfluorobutanoic acid (PFBA)
533	533	Water	Perfluoroheptanesulfonic acid (PFHpS)
533	533	Water	Perfluoropentanesulfonic acid (PFPeS)

Accreditation/Certification Summary

Client: City & County of Honolulu
 Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Laboratory: Eurofins Eaton Analytical Pomona (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
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The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
533	533	Water	Perfluoropentanoic acid (PFPeA)
537.1	537.1 DW	Drinking Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537.1	537.1 DW	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537.1	537.1 DW	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
537.1	537.1 DW	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537.1	537.1 DW	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537.1	537.1 DW	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537.1	537.1 DW	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
537.1	537.1 DW	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)



Method Summary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA POM
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA POM
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA POM
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA POM

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA POM = Eurofins Eaton Analytical Pomona, 941 Corporate Center Drive, Pomona, CA 91768-2642, TEL (626)386-1100



Sample Summary

Client: City & County of Honolulu
Project/Site: RED-HILL [PFAS]

Job ID: 380-78404-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
380-78404-1	AIEA WELLS PUMPS 1&2 (260) (#2)	Drinking Water	01/10/24 08:30	01/12/24 09:25
380-78404-2	FB: AIEA WELLS PUMPS 1&2 (260) (#2)	Water	01/10/24 08:30	01/12/24 09:25

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16

Monrovia, CA (Suite 100)
 750 Royal Oaks Drive Suite 100
 Monrovia, CA 91016
 Phone (626) 386-1100

Chain of Custody Record



Environment Testing
 America

Client Information		Lab PM Arada, Rachelle		Carrier Tracking No(s)		COC No	
Client Contact: Dr Ron Fenstermacher		Phone: 808-748-5840		State of Origin		Page 1 of 2	
Company: City and County of Honolulu		E-Mail: Rachelle.Arada@et.eurofins.com		Job #		Job #	
Address: 630 South Beretania St. Chemistry Lab		Due Date Requested:		Analysis Requested		Preservation Codes:	
City: Honolulu		TAT Requested (days): Standard		SUBCONTRACT - 625 PAH Physis LL (EAL) + TICS		A - HCL N - None O - AshNaO2 P - Na2O4S Q - Nitric Acid R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - DI Water X - EDTA Y - Trizma Z - other (specify) ammonium acetate	
State, Zip Hawaii 96843		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		SUBCONTRACT - 8015 Diesel LL (EAL) and Motor Oil			
Phone 808-748-5841		PO #: C20525101 exp 05312023		SUBCONTRACT - (MOD) 525 plus Plus TICS			
Email RFENSTEMACHER@hbws.org		WO #		SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL)			
Project Name RED HILL/HBWS Sites Event Desc. RUSH Weekly Red Hill		Project #: 38001111		SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL)			
Site Hawaii		SSOW#		SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL)			
Sample Identification		Sample Date		R		Total Number of Containers	
MOANALUA WELLS		1-10-24		RA		X	
AIEA GULCH WELLS PUMP 2		1-10-24 0830		RA		3 3	
AIEA WELLS PUMPS 1&2 (260) (write pump number) #2		1-10-24 0830		RA		3 3	
HALAWA WELLS UNIT 1&2 (write pump number)				RA			
TB MOANALUA WELLS				RA			
TB AIEA GULCH WELLS PUMP 2				RA			
TB AIEA WELLS PUMPS 1&2 (260)		1-10-24 0830		RA		1 1	
TB HALAWA WELLS UNIT 1&2				RA		380-78404 COC	
Possible Hazard Identification		Sample Time		RA		Special Instructions/Note:	
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		1-10-24 0830		RA		OH-1-10-24 Chlorinated	
Deliverable Requested I, II, III, IV, Other (specify)		Sample Date		RA		380-78404 COC	
Empty Kit Relinquished by		Sample Date		RA		380-78404 COC	
Relinquished by		Date		RA		380-78404 COC	
Relinquished by		Date		RA		380-78404 COC	
Relinquished by		Date		RA		380-78404 COC	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Date		RA		380-78404 COC	
Custody Seal No		Date		RA		380-78404 COC	



Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-78404-1

Login Number: 78404
List Number: 1
Creator: Elyas, Matthew

List Source: Eurofins Eaton Analytical Pomona

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	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	
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	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	