eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Erwin Kawata
City & County of Honolulu
630 South Beretania Street
Public Service Bldg. Room 310
Honolulu, Hawaii 96843

Generated 9/16/2024 9:09:27 AM

JOB DESCRIPTION

RED-HILL
RUSH Weekly Red Hill

JOB NUMBER

380-112203-1

Eurofins Eaton Analytical Pomona
941 Corporate Center Drive
Pomona CA 91768-2642

See page two for job notes and contact information.

my EOL

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

Rachelle Arada

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9/16/2024 9:09:27 AM

Authorized for release by
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Table of Contents

Definitions/Glossary

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

Job ID: 380-112203-1

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.
¤	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

Job Narrative
380-112203-1

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 and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided 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 9/10/2024 10:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.7°C and 2.3°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

Job ID: 380-112203-1

Client Sample ID: HALAWA SHAFT Viewing Pool
PWSID Number: HI0000331

Lab Sample ID: 380-112203-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	3.4		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.6		2.0		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.8		2.0		ng/L	1		537.1	Total/NA

Client Sample ID: FB: HALAWA SHAFT Viewing Pool

Lab Sample ID: 380-112203-2

No Detections.

This Detection Summary does not include radiochemical test results.

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

Job ID: 380-112203-1

Client Sample ID: HALAWA SHAFT Viewing Pool
Date Collected: 09/04/24 11:38
Date Received: 09/10/24 10:15

Lab Sample ID: 380-112203-1
Matrix: Drinking Water
PWSID Number: HI0000331

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorohexanesulfonic acid (PFHxS)	**3.4**		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorooctanesulfonic acid (PFOS)	**3.4**		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:44	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*87*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C6 PFDA	*90*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C5 PFHxA	*93*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C4 PFHpA	*91*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C8 PFOA	*87*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C9 PFNA	*89*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C7 PFUnA	*91*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C2 PFDoA	*95*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C4 PFBA	*95*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C5 PFPeA	*95*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C3 PFBS	*107*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C3 PFHxS	*107*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*

Client Sample ID: HALAWA SHAFT Viewing Pool

Lab Sample ID: 380-112203-1
Date Collected: 09/04/24 11:38
Matrix: Drinking Water
Date Received: 09/10/24 10:15
PWSID Number: HI0000331

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOS	*106*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C2-4:2-FTS	*103*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C2-6:2-FTS	*114*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*1*
13C2-8:2-FTS	*104*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:44*	*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		09/11/24 09:40	09/12/24 14:49	1
Perfluorooctanesulfonic acid (PFOS)	**3.6**		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorohexanesulfonic acid (PFHxS)	**3.8**		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*115*		*70 - 130*	*09/11/24 09:40*	*09/12/24 14:49*	*1*
13C2 PFHxA	*116*		*70 - 130*	*09/11/24 09:40*	*09/12/24 14:49*	*1*
13C2 PFDA	*113*		*70 - 130*	*09/11/24 09:40*	*09/12/24 14:49*	*1*
13C3-GenX	*114*		*70 - 130*	*09/11/24 09:40*	*09/12/24 14:49*	*1*

Client Sample ID: FB: HALAWA SHAFT Viewing Pool

Lab Sample ID: 380-112203-2
Date Collected: 09/04/24 11:38
Matrix: Water
Date Received: 09/10/24 10:15

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1

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

Job ID: 380-112203-1

Client Sample ID: FB: HALAWA SHAFT Viewing Pool
Date Collected: 09/04/24 11:38
Date Received: 09/10/24 10:15

Lab Sample ID: 380-112203-2
Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		09/13/24 05:51	09/14/24 11:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*99*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C6 PFDA	*105*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C5 PFHxA	*107*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C4 PFHpA	*105*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C8 PFOA	*106*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C9 PFNA	*104*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C7 PFUnA	*106*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C2 PFDoA	*107*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C4 PFBA	*105*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C5 PFPeA	*107*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C3 PFBS	*107*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C3 PFHxS	*108*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C8 PFOS	*105*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C2-4:2-FTS	*102*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C2-6:2-FTS	*96*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*
13C2-8:2-FTS	*101*		*50 - 200*	*09/13/24 05:51*	*09/14/24 11:54*	*1*

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

Job ID: 380-112203-1

Client Sample ID: FB: HALAWA SHAFT Viewing Pool
Date Collected: 09/04/24 11:38
Date Received: 09/10/24 10:15

Lab Sample ID: 380-112203-2
Matrix: Water

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		09/11/24 09:40	09/12/24 14:59	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		09/11/24 09:40	09/12/24 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*111*		*70 - 130*	*09/11/24 09:40*	*09/12/24 14:59*	*1*
13C2 PFHxA	*113*		*70 - 130*	*09/11/24 09:40*	*09/12/24 14:59*	*1*
13C2 PFDA	*112*		*70 - 130*	*09/11/24 09:40*	*09/12/24 14:59*	*1*
13C3-GenX	*107*		*70 - 130*	*09/11/24 09:40*	*09/12/24 14:59*	*1*

Action Limit Summary

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

Job ID: 380-112203-1

Client Sample ID: HALAWA SHAFT Viewing Pool

Lab Sample ID: 380-112203-1

PWSID Number: HI0000331

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL Limit	RL	Method	Prep Type
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.4		ng/L	10	2.0	533	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		ng/L	4	2.0	533	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	533	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.6		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.8		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Client Sample ID: FB: HALAWA SHAFT Viewing Pool

Lab Sample ID: 380-112203-2

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL Limit	RL	Method	Prep Type
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	533	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	533	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Surrogate Summary

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

Job ID: 380-112203-1

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

Matrix: Drinking Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-112203-1	HALAWA SHAFT Viewing Pool	115	116	113	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**

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-112144-T-1-C MS	Matrix Spike	108	112	113	103
380-112144-U-1-C MSD	Matrix Spike Duplicate	119	118	115	112
380-112203-2	FB: HALAWA SHAFT Viewing Pool	111	113	112	107
LCS 380-107813/22-A	Lab Control Sample	114	113	115	108
MBL 380-107813/20-A	Method Blank	121	116	118	113
MRL 380-107813/21-A	Lab Control Sample	108	112	116	104

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

Job ID: 380-112203-1

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)	PFDoA (50-200)
380-112203-1	HALAWA SHAFT Viewing Pool	87	90	93	91	87	89	91	95

		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)
380-112203-1	HALAWA SHAFT Viewing Pool	95	95	107	107	106	103	114	104

Surrogate Legend

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

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)	PFDoA (50-200)
380-110737-R-1-A MS	Matrix Spike	79	83	83	79	76	80	90	90
380-110737-S-1-A MSD	Matrix Spike Duplicate	80	89	85	80	81	86	96	97
380-112203-2	FB: HALAWA SHAFT Viewing Pool	99	105	107	105	106	104	106	107
LCS 380-108223/22-A	Lab Control Sample	103	102	108	106	108	104	104	105
MBL 380-108223/20-A	Method Blank	97	100	102	101	101	101	102	101
MRL 380-108223/21-A	Lab Control Sample	95	99	104	100	102	100	100	98

		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)
380-110737-R-1-A MS	Matrix Spike	84	81	100	105	104	101	113	104
380-110737-S-1-A MSD	Matrix Spike Duplicate	82	80	99	102	105	99	106	100
380-112203-2	FB: HALAWA SHAFT Viewing Pool	105	107	107	108	105	102	96	101
LCS 380-108223/22-A	Lab Control Sample	106	103	107	104	105	96	97	91
MBL 380-108223/20-A	Method Blank	101	97	102	102	103	96	95	96
MRL 380-108223/21-A	Lab Control Sample	107	101	103	101	103	98	100	97

Surrogate Legend

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

Isotope Dilution Summary

Client: City & County of Honolulu
Job ID: 380-112203-1
Project/Site: RED-HILL

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

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

Lab Sample ID: MBL 380-108223/20-A
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108223

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.25		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	0.328	J	2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluoropentanoic acid (PFPeA)	0.387	J	2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0		ng/L		09/13/24 05:51	09/14/24 09:23	1

Isotope Dilution	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*97*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C6 PFDA	*100*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C5 PFHxA	*102*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C4 PFHpA	*101*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C8 PFOA	*101*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C9 PFNA	*101*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C7 PFUnA	*102*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C2 PFDoA	*101*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C4 PFBA	*101*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C5 PFPeA	*97*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C3 PFBS	*102*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*
13C3 PFHxS	*102*		*50 - 200*	*09/13/24 05:51*	*09/14/24 09:23*	*1*

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

Lab Sample ID: MBL 380-108223/20-A
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108223

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	103		50 - 200	09/13/24 05:51	09/14/24 09:23	1
13C2-4:2-FTS	96		50 - 200	09/13/24 05:51	09/14/24 09:23	1
13C2-6:2-FTS	95		50 - 200	09/13/24 05:51	09/14/24 09:23	1
13C2-8:2-FTS	96		50 - 200	09/13/24 05:51	09/14/24 09:23	1

Lab Sample ID: LCS 380-108223/22-A
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108223

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	60.2	61.6		ng/L		102	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.2	59.0		ng/L		98	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.2	59.2		ng/L		98	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.2	60.5		ng/L		100	70 - 130
Perfluorobutanesulfonic acid (PFBS)	60.2	59.8		ng/L		99	70 - 130
Perfluorodecanoic acid (PFDA)	60.2	58.1		ng/L		96	70 - 130
Perfluorododecanoic acid (PFDoA)	60.2	61.4		ng/L		102	70 - 130
Perfluoroheptanoic acid (PFHpA)	60.2	56.0		ng/L		93	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	60.2	56.6		ng/L		94	70 - 130
Perfluorohexanoic acid (PFHxA)	60.2	59.6		ng/L		99	70 - 130
Perfluorononanoic acid (PFNA)	60.2	59.2		ng/L		98	70 - 130
Perfluorooctanesulfonic acid (PFOS)	60.2	57.3		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	60.2	58.8		ng/L		98	70 - 130
Perfluoroundecanoic acid (PFUnA)	60.2	61.1		ng/L		101	70 - 130
Perfluorobutanoic acid (PFBA)	60.2	59.1		ng/L		98	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.2	60.7		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.2	63.4		ng/L		105	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.2	59.5		ng/L		99	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.2	59.4		ng/L		99	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.2	55.1		ng/L		92	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.2	55.5		ng/L		92	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.2	60.7		ng/L		101	70 - 130
Perfluoropentanoic acid (PFPeA)	60.2	61.2		ng/L		102	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.2	58.1		ng/L		96	70 - 130

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

Lab Sample ID: LCS 380-108223/22-A
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108223

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluoropentanesulfonic acid (PFPeS)			60.2	55.8		ng/L		93	70 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*103*		*50 - 200*
13C6 PFDA	*102*		*50 - 200*
13C5 PFHxA	*108*		*50 - 200*
13C4 PFHpA	*106*		*50 - 200*
13C8 PFOA	*108*		*50 - 200*
13C9 PFNA	*104*		*50 - 200*
13C7 PFUnA	*104*		*50 - 200*
13C2 PFDoA	*105*		*50 - 200*
13C4 PFBA	*106*		*50 - 200*
13C5 PFPeA	*103*		*50 - 200*
13C3 PFBS	*107*		*50 - 200*
13C3 PFHxS	*104*		*50 - 200*
13C8 PFOS	*105*		*50 - 200*
13C2-4:2-FTS	*96*		*50 - 200*
13C2-6:2-FTS	*97*		*50 - 200*
13C2-8:2-FTS	*91*		*50 - 200*

Lab Sample ID: MRL 380-108223/21-A
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108223

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			2.00	2.01	J	ng/L		100	50 - 150		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			2.00	1.98	J	ng/L		99	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			2.00	2.10	J	ng/L		105	50 - 150		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			2.00	1.99	J	ng/L		99	50 - 150		
Perfluorobutanesulfonic acid (PFBS)			2.00	2.07	J	ng/L		104	50 - 150		
Perfluorodecanoic acid (PFDA)			2.00	2.02	J	ng/L		101	50 - 150		
Perfluorododecanoic acid (PFDoA)			2.00	2.07	J	ng/L		103	50 - 150		
Perfluoroheptanoic acid (PFHpA)			2.00	2.05	J	ng/L		102	50 - 150		
Perfluorohexanesulfonic acid (PFHxS)			2.00	1.84	J	ng/L		92	50 - 150		
Perfluorohexanoic acid (PFHxA)			2.00	2.16	J	ng/L		108	50 - 150		
Perfluorononanoic acid (PFNA)			2.00	2.08	J	ng/L		104	50 - 150		
Perfluorooctanesulfonic acid (PFOS)			2.00	2.00	J	ng/L		100	50 - 150		
Perfluorooctanoic acid (PFOA)			2.00	2.08	J	ng/L		104	50 - 150		
Perfluoroundecanoic acid (PFUnA)			2.00	2.06	J	ng/L		103	50 - 150		
Perfluorobutanoic acid (PFBA)			2.00	2.02	J	ng/L		101	50 - 150		

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

Lab Sample ID: MRL 380-108223/21-A
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108223

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	1.92	J	ng/L		96	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.17	J	ng/L		108	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.27	J	ng/L		113	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	2.03	J	ng/L		101	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	2.00	2.02	J	ng/L		101	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	1.89	J	ng/L		94	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	2.06	J	ng/L		103	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.08	J	ng/L		104	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	2.01	J	ng/L		101	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	1.96	J	ng/L		98	50 - 150

Isotope Dilution	*MRL %Recovery*	*MRL Qualifier*	*Limits*
13C3 HFPO-DA	*95*		*50 - 200*
13C6 PFDA	*99*		*50 - 200*
13C5 PFHxA	*104*		*50 - 200*
13C4 PFHpA	*100*		*50 - 200*
13C8 PFOA	*102*		*50 - 200*
13C9 PFNA	*100*		*50 - 200*
13C7 PFUnA	*100*		*50 - 200*
13C2 PFDoA	*98*		*50 - 200*
13C4 PFBA	*107*		*50 - 200*
13C5 PFPeA	*101*		*50 - 200*
13C3 PFBS	*103*		*50 - 200*
13C3 PFHxS	*101*		*50 - 200*
13C8 PFOS	*103*		*50 - 200*
13C2-4:2-FTS	*98*		*50 - 200*
13C2-6:2-FTS	*100*		*50 - 200*
13C2-8:2-FTS	*97*		*50 - 200*

Lab Sample ID: 380-110737-R-1-A MS
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 108223

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.4	62.2		ng/L		103	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.4	62.5		ng/L		104	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.4	60.6		ng/L		100	70 - 130

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

Lab Sample ID: 380-110737-R-1-A MS
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 108223

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		60.4	64.2		ng/L		106	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		60.4	64.8		ng/L		107	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		60.4	63.0		ng/L		104	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		60.4	65.6		ng/L		109	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		60.4	60.8		ng/L		101	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		60.4	59.2		ng/L		98	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		60.4	65.8		ng/L		108	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		60.4	62.1		ng/L		103	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		60.4	60.2		ng/L		100	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		60.4	65.9		ng/L		109	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		60.4	64.6		ng/L		107	70 - 130
Perfluorobutanoic acid (PFBA)	<2.0		60.4	63.0		ng/L		104	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.4	62.9		ng/L		104	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.4	64.7		ng/L		107	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.4	61.5		ng/L		102	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.4	59.1		ng/L		98	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.4	60.1		ng/L		100	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.4	57.0		ng/L		94	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.4	61.9		ng/L		103	70 - 130
Perfluoropentanoic acid (PFPeA)	<2.0		60.4	64.1		ng/L		105	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.4	62.8		ng/L		104	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.4	61.1		ng/L		101	70 - 130

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3 HFPO-DA	*79*		*50 - 200*
13C6 PFDA	*83*		*50 - 200*
13C5 PFHxA	*83*		*50 - 200*
13C4 PFHpA	*79*		*50 - 200*
13C8 PFOA	*76*		*50 - 200*
13C9 PFNA	*80*		*50 - 200*
13C7 PFUnA	*90*		*50 - 200*
13C2 PFDoA	*90*		*50 - 200*
13C4 PFBA	*84*		*50 - 200*
13C5 PFPeA	*81*		*50 - 200*
13C3 PFBS	*100*		*50 - 200*
13C3 PFHxS	*105*		*50 - 200*
13C8 PFOS	*104*		*50 - 200*

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

Lab Sample ID: 380-110737-R-1-A MS
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 108223

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C2-4:2-FTS	101		50 - 200
13C2-6:2-FTS	113		50 - 200
13C2-8:2-FTS	104		50 - 200

Lab Sample ID: 380-110737-S-1-A MSD
Matrix: Water
Analysis Batch: 108321

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 108223

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.4	59.0		ng/L		98	70 - 130	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.4	60.5		ng/L		100	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.4	62.7		ng/L		104	70 - 130	3	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		60.4	62.9		ng/L		104	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		60.4	59.6		ng/L		99	70 - 130	8	30
Perfluorodecanoic acid (PFDA)	<2.0		60.4	61.4		ng/L		102	70 - 130	3	30
Perfluorododecanoic acid (PFDoA)	<2.0		60.4	63.6		ng/L		105	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	<2.0		60.4	61.6		ng/L		102	70 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		60.4	59.7		ng/L		98	70 - 130	1	30
Perfluorohexanoic acid (PFHxA)	<2.0		60.4	63.3		ng/L		104	70 - 130	4	30
Perfluorononanoic acid (PFNA)	<2.0		60.4	60.4		ng/L		100	70 - 130	3	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		60.4	58.6		ng/L		97	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	<2.0		60.4	64.3		ng/L		106	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)	<2.0		60.4	65.0		ng/L		108	70 - 130	1	30
Perfluorobutanoic acid (PFBA)	<2.0		60.4	62.5		ng/L		103	70 - 130	1	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.4	64.4		ng/L		107	70 - 130	2	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.4	66.0		ng/L		109	70 - 130	2	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.4	62.2		ng/L		103	70 - 130	1	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.4	57.2		ng/L		95	70 - 130	3	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.4	58.2		ng/L		96	70 - 130	3	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.4	57.3		ng/L		95	70 - 130	1	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.4	64.8		ng/L		107	70 - 130	5	30
Perfluoropentanoic acid (PFPeA)	<2.0		60.4	64.4		ng/L		106	70 - 130	0	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.4	61.7		ng/L		102	70 - 130	2	30
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.4	61.5		ng/L		102	70 - 130	1	30

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

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C3 HFPO-DA	80		50 - 200
13C6 PFDA	89		50 - 200
13C5 PFHxA	85		50 - 200
13C4 PFHpA	80		50 - 200
13C8 PFOA	81		50 - 200
13C9 PFNA	86		50 - 200
13C7 PFUnA	96		50 - 200
13C2 PFDoA	97		50 - 200
13C4 PFBA	82		50 - 200
13C5 PFPeA	80		50 - 200
13C3 PFBS	99		50 - 200
13C3 PFHxS	102		50 - 200
13C8 PFOS	105		50 - 200
13C2-4:2-FTS	99		50 - 200
13C2-6:2-FTS	106		50 - 200
13C2-8:2-FTS	100		50 - 200

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

Lab Sample ID: MBL 380-107813/20-A
Matrix: Water
Analysis Batch: 108054

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 107813

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.29		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		09/11/24 09:40	09/12/24 13:11	1

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	121		70 - 130	09/11/24 09:40	09/12/24 13:11	1
13C2 PFHxA	116		70 - 130	09/11/24 09:40	09/12/24 13:11	1
13C2 PFDA	118		70 - 130	09/11/24 09:40	09/12/24 13:11	1

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

Lab Sample ID: MBL 380-107813/20-A
Matrix: Water
Analysis Batch: 108054

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 107813

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-GenX	113		70 - 130	09/11/24 09:40	09/12/24 13:11	1

Lab Sample ID: LCS 380-107813/22-A
Matrix: Water
Analysis Batch: 108054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 107813

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	26.6		ng/L		106	70 - 130
Perfluorooctanesulfonic acid (PFOS)	25.1	28.2		ng/L		112	70 - 130
Perfluoroundecanoic acid (PFUnA)	25.1	27.3		ng/L		109	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	27.6		ng/L		110	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	27.5		ng/L		110	70 - 130
Perfluorohexanoic acid (PFHxA)	25.1	26.5		ng/L		106	70 - 130
Perfluorododecanoic acid (PFDoA)	25.1	27.4		ng/L		109	70 - 130
Perfluorooctanoic acid (PFOA)	25.1	27.9		ng/L		111	70 - 130
Perfluorodecanoic acid (PFDA)	25.1	27.9		ng/L		112	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	25.1	27.7		ng/L		110	70 - 130
Perfluorobutanesulfonic acid (PFBS)	25.1	26.9		ng/L		108	70 - 130
Perfluoroheptanoic acid (PFHpA)	25.1	28.1		ng/L		112	70 - 130
Perfluorononanoic acid (PFNA)	25.1	27.9		ng/L		111	70 - 130
Perfluorotetradecanoic acid (PFTA)	25.1	27.3		ng/L		109	70 - 130
Perfluorotridecanoic acid (PFTrDA)	25.1	26.9		ng/L		108	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	25.1	27.9		ng/L		112	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	25.1	27.4		ng/L		109	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	25.1	26.8		ng/L		107	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
d5-NEtFOSAA	114		70 - 130
13C2 PFHxA	113		70 - 130
13C2 PFDA	115		70 - 130
13C3-GenX	108		70 - 130

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

Lab Sample ID: MRL 380-107813/21-A
Matrix: Water
Analysis Batch: 108054

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 107813

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.16	J	ng/L		108	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.31	J	ng/L		115	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.25	J	ng/L		112	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.29	J	ng/L		114	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.05	J	ng/L		102	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.34	J	ng/L		117	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.29	J	ng/L		114	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.30	J	ng/L		115	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.29	J	ng/L		114	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.31	J	ng/L		115	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	2.23	J	ng/L		111	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.45	J	ng/L		122	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.34	J	ng/L		117	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	2.33	J	ng/L		116	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	2.18	J	ng/L		109	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.21	J	ng/L		110	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	2.27	J	ng/L		114	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.33	J	ng/L		116	50 - 150

Surrogate	*MRL %Recovery*	*MRL Qualifier*	*Limits*
d5-NEtFOSAA	*108*		*70 - 130*
13C2 PFHxA	*112*		*70 - 130*
13C2 PFDA	*116*		*70 - 130*
13C3-GenX	*104*		*70 - 130*

Lab Sample ID: 380-112144-T-1-C MS
Matrix: Water
Analysis Batch: 108054

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 107813

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		25.1	25.9		ng/L		103	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		25.1	28.2		ng/L		112	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	28.4		ng/L		113	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	26.2		ng/L		104	70 - 130

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

Lab Sample ID: 380-112144-T-1-C MS
Matrix: Water
Analysis Batch: 108054

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 107813

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.1	26.3		ng/L		105	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	27.0		ng/L		108	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	28.2		ng/L		112	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		25.1	28.3		ng/L		113	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		25.1	27.7		ng/L		110	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		25.1	28.3		ng/L		113	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		25.1	27.1		ng/L		106	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	28.7		ng/L		114	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		25.1	27.8		ng/L		111	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	27.2		ng/L		108	70 - 130
Perfluorotridecanoic acid (PFTrDA)	<2.0		25.1	26.5		ng/L		106	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.1	27.5		ng/L		110	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.1	28.1		ng/L		112	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.1	28.2		ng/L		112	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
d5-NEtFOSAA	*108*		*70 - 130*
13C2 PFHxA	*112*		*70 - 130*
13C2 PFDA	*113*		*70 - 130*
13C3-GenX	*103*		*70 - 130*

Lab Sample ID: 380-112144-U-1-C MSD
Matrix: Water
Analysis Batch: 108054

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 107813

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		25.1	26.8		ng/L		107	70 - 130	3	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		25.1	27.7		ng/L		111	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	28.3		ng/L		113	70 - 130	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	27.1		ng/L		108	70 - 130	3	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.1	28.4		ng/L		113	70 - 130	8	30
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	28.2		ng/L		113	70 - 130	5	30
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	27.7		ng/L		111	70 - 130	2	30
Perfluorooctanoic acid (PFOA)	<2.0		25.1	28.6		ng/L		114	70 - 130	1	30
Perfluorodecanoic acid (PFDA)	<2.0		25.1	27.7		ng/L		111	70 - 130	0	30

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

Lab Sample ID: 380-112144-U-1-C MSD
Matrix: Water
Analysis Batch: 108054

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 107813

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanesulfonic acid (PFHxS)	<2.0		25.1	28.1		ng/L		112	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		25.1	27.8		ng/L		109	70 - 130	2	30
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	28.9		ng/L		115	70 - 130	1	30
Perfluorononanoic acid (PFNA)	<2.0		25.1	28.1		ng/L		112	70 - 130	1	30
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	27.2		ng/L		109	70 - 130	0	30
Perfluorotridecanoic acid (PFTrDA)	<2.0		25.1	27.2		ng/L		108	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.1	27.1		ng/L		108	70 - 130	2	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.1	27.2		ng/L		109	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.1	27.3		ng/L		109	70 - 130	3	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
d5-NEtFOSAA	*119*		*70 - 130*
13C2 PFHxA	*118*		*70 - 130*
13C2 PFDA	*115*		*70 - 130*
13C3-GenX	*112*		*70 - 130*

LCMS

Prep Batch: 107813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-112203-1	HALAWA SHAFT Viewing Pool	Total/NA	Drinking Water	537.1 DW	
380-112203-2	FB: HALAWA SHAFT Viewing Pool	Total/NA	Water	537.1 DW	
MBL 380-107813/20-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-107813/22-A	Lab Control Sample	Total/NA	Water	537.1 DW	
MRL 380-107813/21-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-112144-T-1-C MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-112144-U-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	

Analysis Batch: 108054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-112203-1	HALAWA SHAFT Viewing Pool	Total/NA	Drinking Water	537.1	107813
380-112203-2	FB: HALAWA SHAFT Viewing Pool	Total/NA	Water	537.1	107813
MBL 380-107813/20-A	Method Blank	Total/NA	Water	537.1	107813
LCS 380-107813/22-A	Lab Control Sample	Total/NA	Water	537.1	107813
MRL 380-107813/21-A	Lab Control Sample	Total/NA	Water	537.1	107813
380-112144-T-1-C MS	Matrix Spike	Total/NA	Water	537.1	107813
380-112144-U-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	107813

Prep Batch: 108223

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-112203-1	HALAWA SHAFT Viewing Pool	Total/NA	Drinking Water	533	
380-112203-2	FB: HALAWA SHAFT Viewing Pool	Total/NA	Water	533	
MBL 380-108223/20-A	Method Blank	Total/NA	Water	533	
LCS 380-108223/22-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-108223/21-A	Lab Control Sample	Total/NA	Water	533	
380-110737-R-1-A MS	Matrix Spike	Total/NA	Water	533	
380-110737-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	

Analysis Batch: 108321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-112203-1	HALAWA SHAFT Viewing Pool	Total/NA	Drinking Water	533	108223
380-112203-2	FB: HALAWA SHAFT Viewing Pool	Total/NA	Water	533	108223
MBL 380-108223/20-A	Method Blank	Total/NA	Water	533	108223
LCS 380-108223/22-A	Lab Control Sample	Total/NA	Water	533	108223
MRL 380-108223/21-A	Lab Control Sample	Total/NA	Water	533	108223
380-110737-R-1-A MS	Matrix Spike	Total/NA	Water	533	108223
380-110737-S-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	108223

Lab Chronicle

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

Job ID: 380-112203-1

Client Sample ID: HALAWA SHAFT Viewing Pool

Lab Sample ID: 380-112203-1
Matrix: Drinking Water
Date Collected: 09/04/24 11:38
Date Received: 09/10/24 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			108223	XTD8	EA POM	09/13/24 05:51
Total/NA	Analysis	533		1	108321	Y5FM	EA POM	09/14/24 11:44
Total/NA	Prep	537.1 DW			107813	G9MN	EA POM	09/11/24 09:40
Total/NA	Analysis	537.1		1	108054	Y5FM	EA POM	09/12/24 14:49

Client Sample ID: FB: HALAWA SHAFT Viewing Pool

Lab Sample ID: 380-112203-2
Matrix: Water
Date Collected: 09/04/24 11:38
Date Received: 09/10/24 10:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			108223	XTD8	EA POM	09/13/24 05:51
Total/NA	Analysis	533		1	108321	Y5FM	EA POM	09/14/24 11:54
Total/NA	Prep	537.1 DW			107813	G9MN	EA POM	09/11/24 09:40
Total/NA	Analysis	537.1		1	108054	Y5FM	EA POM	09/12/24 14:59

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

Job ID: 380-112203-1

Laboratory: Eurofins Eaton Analytical Pomona

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-25

Method Summary

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

Job ID: 380-112203-1

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

Job ID: 380-112203-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
380-112203-1	HALAWA SHAFT Viewing Pool	Drinking Water	09/04/24 11:38	09/10/24 10:15	HI0000331
380-112203-2	FB: HALAWA SHAFT Viewing Pool	Water	09/04/24 11:38	09/10/24 10:15	

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

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: bailey	Lab PM: Arada Rachelle	Carrier Tracking No(s):	COC No: 380-27941-2757 2
Client Contact: Dr Ron Fenstermacher	Phone: +1 808 748 5840	E-Mail: Rachelle.Arada@et.eurofinsus.com	State of Origin:	Page: Page 2 of 2
Company: City & County of Honolulu	PWSID:			Job #:
Address: 630 South Beretania Street; Chemistry Lab	Due Date Requested			
City: Honolulu	TAT Requested (days):			
State, Zip: HI, 96843	Compliance Project: Δ No			
Phone: 808-748-5091 (tel)	PO #: C20525101 exp 05312023			
Email: rfenstemacher@hbws.org	WO #:			
Project Name: RED-HILL/HBWS sites Event Desc: RUSH Weekly Red Hill	Project #: 38001111			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M Hexane, N - None, O - AsNaO2, P Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SUBCONTRACT - 625 PAH Physis LL (EAL) + TICs	8015B_GRO_LL - (MOD) GRO	8015B_DRO_LL_CS HNL Ranges C10-C24/C24-C36/C8-C18	525.2_PREC - (MOD) 525plus PLUS TICs	537 1_DW_PREC - 537 1 Full List	533 - All Analytes	Total Number of containers	Special Instructions/Note:
			Preservation Code:				R	A	Q	QA	Y	I		
Halawa Shaft Viewing Pool	4-Sep-2024	1133	G	Water							3	3		chlorinated
														chlorinated
FB: Halawa Shaft Viewing Pool	4-Sep-2024	1133									1	1		

380-112203 COC

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements.
① 7784 7124 9441
② 7784 7124 9452

Empty Kit Relinquished by:	Date	Time:	Method of Shipment: FED EX

	Date/Time	Company	Received by	Date/Time	Company
Relinquished [redacted]	09 Sept. 2024 1400	HBWS	G.PEITNER	09/10/2024 10:15	EETP
Relinquished by	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No

Cooler Temperature(s) °C and Other Remarks:
751B ① 0.8°-0.1°=0.7° ② 2.4°-0.1°=2.3° GEL-PROPER

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-112203-1

Login Number: 112203
List Number: 1
Creator: Segura, Ryan

List Source: Eurofins Eaton Analytical Pomona

Question	Answer	Comment
The coolers custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
Samples were received on ice.	True	
Cooler(s) Temperature is acceptable.	True	
Cooler(s) Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and is 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	
ClO4 headspace requirement met (>50% for CA, >30% for other states).	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	