

# ANALYTICAL REPORT

## PREPARED FOR

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

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## JOB DESCRIPTION

RED-HILL

## JOB NUMBER

380-77419-1

# Eurofins Eaton Analytical Pomona

## Job Notes

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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  
Rachelle Arada, Project Manager  
[Rachelle.Arada@et.eurofinsus.com](mailto:Rachelle.Arada@et.eurofinsus.com)  
(626)386-1106



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# Definitions/Glossary

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

Job ID: 380-77419-1

## 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

Job ID: 380-77419-1

**Job ID: 380-77419-1**

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## Job Narrative 380-77419-1

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 1/5/2024 9:20 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 0.2°C

### Receipt Exceptions

The 2nd page of the COC was not received. This page likely would've listed the Field Blank samples, which were received. HALAWA WELLS UNIT 1 (380-77419-1), TB: HALAWA WELLS UNIT 1 (380-77419-2) and FB: HALAWA WELLS UNIT 1 (380-77419-3)

Method 525.2: The reference method requires samples to be preserved to a pH of <2.0. The following sample was received with insufficient preservation at a pH of 6.0: HALAWA WELLS UNIT 1 (380-77419-1). Analysis cancelled.

### 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: 380-77419-1

## Client Sample ID: HALAWA WELLS UNIT 1

Lab Sample ID: 380-77419-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	2.1		2.0	ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.4		2.0	ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		2.0	ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	2.5		2.0	ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.2		2.0	ng/L	1		537.1	Total/NA
Perfluorohexanoic acid (PFHxA)	2.0		2.0	ng/L	1		537.1	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		2.0	ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.0	ng/L	1		537.1	Total/NA

## Client Sample ID: FB: HALAWA WELLS UNIT 1

Lab Sample ID: 380-77419-3

No Detections.

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

Job ID: 380-77419-1

**Client Sample ID: HALAWA WELLS UNIT 1**

**Lab Sample ID: 380-77419-1**

Date Collected: 01/03/24 11:11

Matrix: Water

Date Received: 01/05/24 09:20

**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		01/12/24 05:26	01/13/24 17:06	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.6</b>		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>2.1</b>		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.4</b>		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>2.1</b>		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
<b>Perfluoropentanoic acid (PFPeA)</b>	<b>2.5</b>		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		01/12/24 05:26	01/13/24 17:06	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	88		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C6 PFDA	91		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C5 PFHxA	91		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C4 PFHpA	93		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C8 PFOA	95		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C9 PFNA	92		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C7 PFUnA	87		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C2 PFDoA	92		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C4 PFBA	93		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C5 PFPeA	96		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C3 PFBS	96		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C3 PFHxS	99		50 - 200	01/12/24 05:26	01/13/24 17:06	1

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# Client Sample Results

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

Job ID: 380-77419-1

**Client Sample ID: HALAWA WELLS UNIT 1**

**Lab Sample ID: 380-77419-1**

Date Collected: 01/03/24 11:11

Matrix: Water

Date Received: 01/05/24 09:20

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	97		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C2-4:2-FTS	107		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C2-6:2-FTS	93		50 - 200	01/12/24 05:26	01/13/24 17:06	1
13C2-8:2-FTS	94		50 - 200	01/12/24 05:26	01/13/24 17:06	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		01/07/24 13:08	01/09/24 07:40	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.2</b>		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>2.0</b>		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>2.0</b>		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.5</b>		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 07:40	1
Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac		
d5-NEtFOSAA	112		70 - 130	01/07/24 13:08	01/09/24 07:40	1		
13C2 PFHxA	107		70 - 130	01/07/24 13:08	01/09/24 07:40	1		
13C2 PFDA	105		70 - 130	01/07/24 13:08	01/09/24 07:40	1		
13C3-GenX	116		70 - 130	01/07/24 13:08	01/09/24 07:40	1		

**Client Sample ID: FB: HALAWA WELLS UNIT 1**

**Lab Sample ID: 380-77419-3**

Date Collected: 01/03/24 11:11

Matrix: Water

Date Received: 01/05/24 09:20

**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		01/08/24 05:00	01/09/24 16:11	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1

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# Client Sample Results

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

Job ID: 380-77419-1

**Client Sample ID: FB: HALAWA WELLS UNIT 1**

**Lab Sample ID: 380-77419-3**

Date Collected: 01/03/24 11:11

Matrix: Water

Date Received: 01/05/24 09:20

**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		01/08/24 05:00	01/09/24 16:11	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		01/08/24 05:00	01/09/24 16:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	89		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C6 PFDA	98		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C5 PFHxA	101		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C4 PFHpA	102		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C8 PFOA	100		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C9 PFNA	99		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C7 PFUnA	95		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C2 PFDoA	108		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C4 PFBA	101		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C5 PFPeA	93		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C3 PFBS	108		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C3 PFHxS	104		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C8 PFOS	101		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C2-4:2-FTS	122		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C2-6:2-FTS	103		50 - 200	01/08/24 05:00	01/09/24 16:11	1
13C2-8:2-FTS	97		50 - 200	01/08/24 05:00	01/09/24 16:11	1

Eurofins Eaton Analytical Pomona

# Client Sample Results

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

Job ID: 380-77419-1

**Client Sample ID: FB: HALAWA WELLS UNIT 1**

**Lab Sample ID: 380-77419-3**

**Date Collected: 01/03/24 11:11**

**Matrix: Water**

**Date Received: 01/05/24 09:20**

**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		01/07/24 13:08	01/09/24 10:14	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		01/07/24 13:08	01/09/24 10:14	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	107		70 - 130			01/07/24 13:08	01/09/24 10:14	1
13C2 PFHxA	112		70 - 130			01/07/24 13:08	01/09/24 10:14	1
13C2 PFDA	99		70 - 130			01/07/24 13:08	01/09/24 10:14	1
13C3-GenX	107		70 - 130			01/07/24 13:08	01/09/24 10:14	1

# Surrogate Summary

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

Job ID: 380-77419-1

**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	PFHxA	PFDA	GenX
		(70-130)	(70-130)	(70-130)	(70-130)
380-77376-A-1-B MS	Matrix Spike	109	105	100	97
380-77419-1	HALAWA WELLS UNIT 1	112	107	105	116
380-77419-1 DU	HALAWA WELLS UNIT 1	105	106	99	115
380-77419-3	FB: HALAWA WELLS UNIT 1	107	112	99	107
LCS 380-70612/19-A	Lab Control Sample	100	101	100	98
MBL 380-70612/17-A	Method Blank	89	86	85	78
MRL 380-70612/18-A	Lab Control Sample	105	99	100	97

### 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: 380-77419-1

## 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)
380-77419-1	HALAWA WELLS UNIT 1	88	91	91	93	95	92	87	92
380-77419-3	FB: HALAWA WELLS UNIT 1	89	98	101	102	100	99	95	108
380-77427-B-1-A MS	Matrix Spike	90	94	102	101	99	98	91	94
380-77427-C-1-A MSD	Matrix Spike Duplicate	90	94	100	100	97	100	92	92
380-77931-AU-1-A MS	Matrix Spike	94	92	95	94	95	94	93	91
380-77931-AV-1-A MSD	Matrix Spike Duplicate	104	97	100	98	99	96	95	97
LCS 380-70655/13-A	Lab Control Sample	94	99	105	100	99	102	94	101
LCS 380-71342/23-A	Lab Control Sample	104	100	104	102	102	100	98	95
MBL 380-70655/11-A	Method Blank	96	111	115	112	113	111	111	108
MBL 380-71342/21-A	Method Blank	98	96	102	102	101	94	90	89
MRL 380-70655/12-A	Lab Control Sample	87	92	103	102	101	99	94	94
MRL 380-71342/22-A	Lab Control Sample	103	98	105	105	101	99	92	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)
380-77419-1	HALAWA WELLS UNIT 1	93	96	96	99	97	107	93	94
380-77419-3	FB: HALAWA WELLS UNIT 1	101	93	108	104	101	122	103	97
380-77427-B-1-A MS	Matrix Spike	102	128	101	100	99	179	129	108
380-77427-C-1-A MSD	Matrix Spike Duplicate	99	124	101	100	97	178	122	105
380-77931-AU-1-A MS	Matrix Spike	91	98	95	95	96	97	91	96
380-77931-AV-1-A MSD	Matrix Spike Duplicate	96	101	93	96	93	103	93	97
LCS 380-70655/13-A	Lab Control Sample	105	108	105	100	102	119	101	98
LCS 380-71342/23-A	Lab Control Sample	100	100	96	98	96	101	93	93
MBL 380-70655/11-A	Method Blank	111	108	115	111	112	134	115	115
MBL 380-71342/21-A	Method Blank	99	98	98	100	99	107	97	95
MRL 380-70655/12-A	Lab Control Sample	100	94	103	102	98	119	103	98
MRL 380-71342/22-A	Lab Control Sample	97	100	97	100	98	104	92	91

#### 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

# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: MBL 380-70655/11-A**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.25		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0	ng/L		01/08/24 05:00	01/09/24 14:43	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	96		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C6 PFDA	111		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C5 PFHxA	115		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C4 PFHpA	112		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C8 PFOA	113		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C9 PFNA	111		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C7 PFUnA	111		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C2 PFDoA	108		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C4 PFBA	111		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C5 PFPeA	108		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C3 PFBS	115		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C3 PFHxS	111		50 - 200	01/08/24 05:00	01/09/24 14:43	1

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# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: MBL 380-70655/11-A**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

<i>Isotope Dilution</i>	<i>MBL %Recovery</i>	<i>MBL Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C8 PFOS	112		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C2-4:2-FTS	134		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C2-6:2-FTS	115		50 - 200	01/08/24 05:00	01/09/24 14:43	1
13C2-8:2-FTS	115		50 - 200	01/08/24 05:00	01/09/24 14:43	1

**Lab Sample ID: LCS 380-70655/13-A**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

<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>
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	60.4	51.2		ng/L		85	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.4	54.1		ng/L		90	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.4	55.2		ng/L		91	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.4	53.6		ng/L		89	70 - 130
Perfluorobutanesulfonic acid (PFBS)	60.4	54.6		ng/L		91	70 - 130
Perfluorodecanoic acid (PFDA)	60.4	55.5		ng/L		92	70 - 130
Perfluorododecanoic acid (PFDoA)	60.4	54.0		ng/L		89	70 - 130
Perfluoroheptanoic acid (PFHpA)	60.4	53.0		ng/L		88	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	60.4	53.0		ng/L		88	70 - 130
Perfluorohexanoic acid (PFHxA)	60.4	54.8		ng/L		91	70 - 130
Perfluorononanoic acid (PFNA)	60.4	53.1		ng/L		88	70 - 130
Perfluorooctanesulfonic acid (PFOS)	60.4	50.2		ng/L		83	70 - 130
Perfluorooctanoic acid (PFOA)	60.4	55.0		ng/L		91	70 - 130
Perfluoroundecanoic acid (PFUnA)	60.4	55.9		ng/L		93	70 - 130
Perfluorobutanoic acid (PFBA)	60.4	55.9		ng/L		93	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.4	57.6		ng/L		95	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.4	52.7		ng/L		87	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.4	59.6		ng/L		99	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.4	47.5		ng/L		79	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.4	52.0		ng/L		86	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.4	56.1		ng/L		93	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.4	52.3		ng/L		87	70 - 130
Perfluoropentanoic acid (PFPeA)	60.4	55.2		ng/L		91	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.4	53.2		ng/L		88	70 - 130

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# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: LCS 380-70655/13-A**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanesulfonic acid (PFPeS)	60.4	54.6		ng/L		90	70 - 130
<b>LCS LCS</b>							
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				
13C3 HFPO-DA	94		50 - 200				
13C6 PFDA	99		50 - 200				
13C5 PFHxA	105		50 - 200				
13C4 PFHpA	100		50 - 200				
13C8 PFOA	99		50 - 200				
13C9 PFNA	102		50 - 200				
13C7 PFUnA	94		50 - 200				
13C2 PFDoA	101		50 - 200				
13C4 PFBA	105		50 - 200				
13C5 PFPeA	108		50 - 200				
13C3 PFBS	105		50 - 200				
13C3 PFHxS	100		50 - 200				
13C8 PFOS	102		50 - 200				
13C2-4:2-FTS	119		50 - 200				
13C2-6:2-FTS	101		50 - 200				
13C2-8:2-FTS	98		50 - 200				

**Lab Sample ID: MRL 380-70655/12-A**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.01	2.01	J	ng/L		100	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.01	2.13	J	ng/L		106	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.01	2.12	J	ng/L		106	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.01	2.20	J	ng/L		110	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.01	2.19	J	ng/L		109	50 - 150
Perfluorodecanoic acid (PFDA)	2.01	2.47	J	ng/L		123	50 - 150
Perfluorododecanoic acid (PFDoA)	2.01	2.35	J	ng/L		117	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.01	2.32	J	ng/L		115	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.01	2.08	J	ng/L		103	50 - 150
Perfluorohexanoic acid (PFHxA)	2.01	2.29	J	ng/L		114	50 - 150
Perfluorononanoic acid (PFNA)	2.01	2.36	J	ng/L		118	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.01	2.23	J	ng/L		111	50 - 150
Perfluorooctanoic acid (PFOA)	2.01	2.30	J	ng/L		115	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.01	2.26	J	ng/L		112	50 - 150
Perfluorobutanoic acid (PFBA)	2.01	2.30	J	ng/L		115	50 - 150

Eurofins Eaton Analytical Pomona

# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: MRL 380-70655/12-A**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.01	2.24	J	ng/L		112	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.01	2.18	J	ng/L		109	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.01	2.44	J	ng/L		121	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.01	2.00	J	ng/L		100	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	2.01	2.00	J	ng/L		100	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.01	2.28	J	ng/L		113	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.01	2.21	J	ng/L		110	50 - 150
Perfluoropentanoic acid (PFPeA)	2.01	2.37	J	ng/L		118	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.01	2.32	J	ng/L		115	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.01	1.99	J	ng/L		99	50 - 150

Isotope Dilution	MRL %Recovery	MRL Qualifier	MRL Limits
13C3 HFPO-DA	87		50 - 200
13C6 PFDA	92		50 - 200
13C5 PFHxA	103		50 - 200
13C4 PFHpA	102		50 - 200
13C8 PFOA	101		50 - 200
13C9 PFNA	99		50 - 200
13C7 PFUnA	94		50 - 200
13C2 PFDoA	94		50 - 200
13C4 PFBA	100		50 - 200
13C5 PFPeA	94		50 - 200
13C3 PFBS	103		50 - 200
13C3 PFHxS	102		50 - 200
13C8 PFOS	98		50 - 200
13C2-4:2-FTS	119		50 - 200
13C2-6:2-FTS	103		50 - 200
13C2-8:2-FTS	98		50 - 200

**Lab Sample ID: 380-77427-B-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.4	57.1		ng/L		95	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.4	58.9		ng/L		98	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.4	56.8		ng/L		94	70 - 130



# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: 380-77427-B-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide	<2.0		60.4	63.0		ng/L		104	70 - 130
Dimer Acid (HFPO-DA/GenX)									
Perfluorobutanesulfonic acid (PFBS)	3.2		60.4	63.2		ng/L		99	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		60.4	63.6		ng/L		105	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		60.4	64.6		ng/L		107	70 - 130
Perfluoroheptanoic acid (PFHpA)	2.7		60.4	62.3		ng/L		99	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	2.2		60.4	61.1		ng/L		98	70 - 130
Perfluorohexanoic acid (PFHxA)	4.0		60.4	62.3		ng/L		97	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		60.4	61.4		ng/L		102	70 - 130
Perfluorooctanesulfonic acid (PFOS)	5.7		60.4	61.5		ng/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	4.9		60.4	64.7		ng/L		99	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		60.4	63.0		ng/L		104	70 - 130
Perfluorobutanoic acid (PFBA)	6.2		60.4	70.9		ng/L		107	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.4	62.4		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.4	62.3		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.4	63.4		ng/L		105	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.4	56.0		ng/L		93	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		60.4	61.7		ng/L		102	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.4	66.6		ng/L		110	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.4	57.4		ng/L		95	70 - 130
Perfluoropentanoic acid (PFPeA)	5.9		60.4	67.2		ng/L		101	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.4	60.6		ng/L		100	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.4	63.4		ng/L		104	70 - 130

Isotope Dilution	MS MS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	90		50 - 200
13C6 PFDA	94		50 - 200
13C5 PFHxA	102		50 - 200
13C4 PFHpA	101		50 - 200
13C8 PFOA	99		50 - 200
13C9 PFNA	98		50 - 200
13C7 PFUnA	91		50 - 200
13C2 PFDoA	94		50 - 200
13C4 PFBA	102		50 - 200
13C5 PFPeA	128		50 - 200
13C3 PFBS	101		50 - 200
13C3 PFHxS	100		50 - 200
13C8 PFOS	99		50 - 200

# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: 380-77427-B-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
13C2-4:2-FTS	179		50 - 200
13C2-6:2-FTS	129		50 - 200
13C2-8:2-FTS	108		50 - 200

**Lab Sample ID: 380-77427-C-1-A MSD**  
**Matrix: Water**  
**Analysis Batch: 70844**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 70655**

<b>Analyte</b>	<b>Sample Result</b>	<b>Sample Qualifier</b>	<b>Spike Added</b>	<b>MSD Result</b>	<b>MSD Qualifier</b>	<b>Unit</b>	<b>D</b>	<b>%Rec</b>	<b>%Rec Limits</b>	<b>RPD</b>	<b>RPD Limit</b>
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.4	56.3		ng/L		93	70 - 130	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.4	58.6		ng/L		97	70 - 130	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.4	57.7		ng/L		96	70 - 130	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		60.4	60.9		ng/L		101	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)	3.2		60.4	60.9		ng/L		96	70 - 130	4	30
Perfluorodecanoic acid (PFDA)	<2.0		60.4	63.3		ng/L		105	70 - 130	0	30
Perfluorododecanoic acid (PFDoA)	<2.0		60.4	62.5		ng/L		104	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	2.7		60.4	60.7		ng/L		96	70 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	2.2		60.4	60.8		ng/L		97	70 - 130	0	30
Perfluorohexanoic acid (PFHxA)	4.0		60.4	63.8		ng/L		99	70 - 130	2	30
Perfluorononanoic acid (PFNA)	<2.0		60.4	58.9		ng/L		97	70 - 130	4	30
Perfluorooctanesulfonic acid (PFOS)	5.7		60.4	63.2		ng/L		95	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	4.9		60.4	67.6		ng/L		104	70 - 130	4	30
Perfluoroundecanoic acid (PFUnA)	<2.0		60.4	63.3		ng/L		105	70 - 130	0	30
Perfluorobutanoic acid (PFBA)	6.2		60.4	73.3		ng/L		111	70 - 130	3	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.4	63.2		ng/L		105	70 - 130	1	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.4	58.0		ng/L		96	70 - 130	7	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.4	63.0		ng/L		104	70 - 130	1	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.4	58.2		ng/L		96	70 - 130	4	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.4	57.9		ng/L		96	70 - 130	6	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.4	69.3		ng/L		115	70 - 130	4	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.4	60.5		ng/L		100	70 - 130	5	30
Perfluoropentanoic acid (PFPeA)	5.9		60.4	69.0		ng/L		105	70 - 130	3	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.4	61.1		ng/L		101	70 - 130	1	30
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.4	61.1		ng/L		100	70 - 130	4	30

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# QC Sample Results

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

Job ID: 380-77419-1

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

Isotope Dilution	MSD MSD		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	90		50 - 200
13C6 PFDA	94		50 - 200
13C5 PFHxA	100		50 - 200
13C4 PFHpA	100		50 - 200
13C8 PFOA	97		50 - 200
13C9 PFNA	100		50 - 200
13C7 PFUnA	92		50 - 200
13C2 PFDoA	92		50 - 200
13C4 PFBA	99		50 - 200
13C5 PFPeA	124		50 - 200
13C3 PFBS	101		50 - 200
13C3 PFHxS	100		50 - 200
13C8 PFOS	97		50 - 200
13C2-4:2-FTS	178		50 - 200
13C2-6:2-FTS	122		50 - 200
13C2-8:2-FTS	105		50 - 200

**Lab Sample ID: MBL 380-71342/21-A**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.25		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1

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# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: MBL 380-71342/21-A**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	<0.38		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0	ng/L		01/12/24 05:26	01/13/24 15:50	1

  

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	98		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C6 PFDA	96		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C5 PFHxA	102		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C4 PFHpA	102		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C8 PFOA	101		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C9 PFNA	94		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C7 PFUnA	90		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C2 PFDoA	89		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C4 PFBA	99		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C5 PFPeA	98		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C3 PFBS	98		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C3 PFHxS	100		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C8 PFOS	99		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C2-4:2-FTS	107		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C2-6:2-FTS	97		50 - 200	01/12/24 05:26	01/13/24 15:50	1
13C2-8:2-FTS	95		50 - 200	01/12/24 05:26	01/13/24 15:50	1

**Lab Sample ID: LCS 380-71342/23-A**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	120	122		ng/L		101	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	120	123		ng/L		102	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	120	117		ng/L		97	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	120	128		ng/L		106	70 - 130
Perfluorobutanesulfonic acid (PFBS)	120	125		ng/L		104	70 - 130
Perfluorodecanoic acid (PFDA)	120	122		ng/L		102	70 - 130
Perfluorododecanoic acid (PFDoA)	120	127		ng/L		106	70 - 130
Perfluoroheptanoic acid (PFHpA)	120	116		ng/L		96	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	120	122		ng/L		102	70 - 130
Perfluorohexanoic acid (PFHxA)	120	120		ng/L		99	70 - 130
Perfluorononanoic acid (PFNA)	120	124		ng/L		103	70 - 130
Perfluorooctanesulfonic acid (PFOS)	120	115		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	120	118		ng/L		98	70 - 130

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# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: LCS 380-71342/23-A**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroundecanoic acid (PFUnA)	120	124		ng/L		103	70 - 130
Perfluorobutanoic acid (PFBA)	120	122		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	120	131		ng/L		109	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	120		ng/L		100	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	120	126		ng/L		105	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	120	123		ng/L		102	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	120	122		ng/L		102	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	120	123		ng/L		102	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	120	122		ng/L		102	70 - 130
Perfluoropentanoic acid (PFPeA)	120	118		ng/L		98	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	120	121		ng/L		100	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	120	124		ng/L		103	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	104		50 - 200
13C6 PFDA	100		50 - 200
13C5 PFHxA	104		50 - 200
13C4 PFHpA	102		50 - 200
13C8 PFOA	102		50 - 200
13C9 PFNA	100		50 - 200
13C7 PFUnA	98		50 - 200
13C2 PFDoA	95		50 - 200
13C4 PFBA	100		50 - 200
13C5 PFPeA	100		50 - 200
13C3 PFBS	96		50 - 200
13C3 PFHxS	98		50 - 200
13C8 PFOS	96		50 - 200
13C2-4:2-FTS	101		50 - 200
13C2-6:2-FTS	93		50 - 200
13C2-8:2-FTS	93		50 - 200

**Lab Sample ID: MRL 380-71342/22-A**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

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	2.20	J	ng/L		110	50 - 150

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# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: MRL 380-71342/22-A**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.25	J	ng/L		112	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.22	J	ng/L		111	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	2.28	J	ng/L		114	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.40	J	ng/L		120	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.36	J	ng/L		118	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.25	J	ng/L		112	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.26	J	ng/L		113	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.19	J	ng/L		109	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.26	J	ng/L		113	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.44	J	ng/L		122	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.56	J	ng/L		128	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.29	J	ng/L		114	50 - 150
Perfluorobutanoic acid (PFBA)	2.00	2.42	J	ng/L		121	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.42	J	ng/L		121	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.46	J	ng/L		123	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.78	J	ng/L		139	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	2.15	J	ng/L		107	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.44	J	ng/L		122	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	2.11	J	ng/L		105	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.57	J	ng/L		128	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	2.29	J	ng/L		114	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	2.22	J	ng/L		111	50 - 150

Isotope Dilution	MRL %Recovery	MRL Qualifier	MRL Limits
13C3 HFPO-DA	103		50 - 200
13C6 PFDA	98		50 - 200
13C5 PFHxA	105		50 - 200
13C4 PFHpA	105		50 - 200
13C8 PFOA	101		50 - 200
13C9 PFNA	99		50 - 200
13C7 PFUnA	92		50 - 200
13C2 PFDoA	95		50 - 200
13C4 PFBA	97		50 - 200
13C5 PFPeA	100		50 - 200
13C3 PFBS	97		50 - 200
13C3 PFHxS	100		50 - 200

# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: MRL 380-71342/22-A**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MRL Qualifier</i>	<i>Limits</i>
13C8 PFOS	98		50 - 200
13C2-4:2-FTS	104		50 - 200
13C2-6:2-FTS	92		50 - 200
13C2-8:2-FTS	91		50 - 200

**Lab Sample ID: 380-77931-AU-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		120	118		ng/L		98	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		120	126		ng/L		105	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		120	121		ng/L		100	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		120	131		ng/L		109	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		120	125		ng/L		104	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		120	131		ng/L		109	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		120	131		ng/L		109	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		120	125		ng/L		104	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		120	124		ng/L		104	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		120	125		ng/L		104	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		120	127		ng/L		106	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		120	117		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		120	123		ng/L		102	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		120	128		ng/L		106	70 - 130
Perfluorobutanoic acid (PFBA)	<2.0		120	132		ng/L		110	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		120	130		ng/L		108	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		120	133		ng/L		110	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		120	131		ng/L		109	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		120	130		ng/L		108	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		120	128		ng/L		107	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		120	130		ng/L		108	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		120	120		ng/L		100	70 - 130
Perfluoropentanoic acid (PFPeA)	<2.0		120	126		ng/L		105	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		120	121		ng/L		101	70 - 130



# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: 380-77931-AU-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanesulfonic acid (PFPeS)	<2.0		120	129		ng/L		107	70 - 130
<b>MS MS</b>									
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>						
13C3 HFPO-DA	94		50 - 200						
13C6 PFDA	92		50 - 200						
13C5 PFHxA	95		50 - 200						
13C4 PFHpA	94		50 - 200						
13C8 PFOA	95		50 - 200						
13C9 PFNA	94		50 - 200						
13C7 PFUnA	93		50 - 200						
13C2 PFDoA	91		50 - 200						
13C4 PFBA	91		50 - 200						
13C5 PFPeA	98		50 - 200						
13C3 PFBS	95		50 - 200						
13C3 PFHxS	95		50 - 200						
13C8 PFOS	96		50 - 200						
13C2-4:2-FTS	97		50 - 200						
13C2-6:2-FTS	91		50 - 200						
13C2-8:2-FTS	96		50 - 200						

**Lab Sample ID: 380-77931-AV-1-A MSD**  
**Matrix: Water**  
**Analysis Batch: 71524**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 71342**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		120	120		ng/L		100	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		120	127		ng/L		106	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		120	119		ng/L		99	70 - 130	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		120	122		ng/L		102	70 - 130	7	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		120	118		ng/L		98	70 - 130	6	30
Perfluorodecanoic acid (PFDA)	<2.0		120	124		ng/L		103	70 - 130	6	30
Perfluorododecanoic acid (PFDoA)	<2.0		120	125		ng/L		104	70 - 130	5	30
Perfluoroheptanoic acid (PFHpA)	<2.0		120	119		ng/L		99	70 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		120	119		ng/L		99	70 - 130	4	30
Perfluorohexanoic acid (PFHxA)	<2.0		120	121		ng/L		100	70 - 130	4	30
Perfluorononanoic acid (PFNA)	<2.0		120	126		ng/L		105	70 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		120	116		ng/L		97	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	<2.0		120	121		ng/L		101	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)	<2.0		120	125		ng/L		104	70 - 130	2	30
Perfluorobutanoic acid (PFBA)	<2.0		120	128		ng/L		106	70 - 130	3	30

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# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: 380-77931-AV-1-A MSD**

**Matrix: Water**

**Analysis Batch: 71524**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 71342**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		120	124		ng/L		103	70 - 130	5	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		120	120		ng/L		100	70 - 130	10	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		120	121		ng/L		101	70 - 130	8	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		120	130		ng/L		108	70 - 130	1	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		120	124		ng/L		103	70 - 130	4	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		120	125		ng/L		104	70 - 130	4	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		120	122		ng/L		101	70 - 130	1	30
Perfluoropentanoic acid (PFPeA)	<2.0		120	120		ng/L		100	70 - 130	5	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		120	120		ng/L		100	70 - 130	1	30
Perfluoropentanesulfonic acid (PFPeS)	<2.0		120	126		ng/L		105	70 - 130	2	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	MSD Limits
13C3 HFPO-DA	104		50 - 200
13C6 PFDA	97		50 - 200
13C5 PFHxA	100		50 - 200
13C4 PFHpA	98		50 - 200
13C8 PFOA	99		50 - 200
13C9 PFNA	96		50 - 200
13C7 PFUnA	95		50 - 200
13C2 PFDoA	97		50 - 200
13C4 PFBA	96		50 - 200
13C5 PFPeA	101		50 - 200
13C3 PFBS	93		50 - 200
13C3 PFHxS	96		50 - 200
13C8 PFOS	93		50 - 200
13C2-4:2-FTS	103		50 - 200
13C2-6:2-FTS	93		50 - 200
13C2-8:2-FTS	97		50 - 200

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

**Lab Sample ID: MBL 380-70612/17-A**

**Matrix: Water**

**Analysis Batch: 70783**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 70612**

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		01/07/24 13:08	01/09/24 06:53	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1

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# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: MBL 380-70612/17-A**  
**Matrix: Water**  
**Analysis Batch: 70783**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 70612**

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		01/07/24 13:08	01/09/24 06:53	1
Surrogate	MBL %Recovery	MBL Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	89		70 - 130			01/07/24 13:08	01/09/24 06:53	1
13C2 PFHxA	86		70 - 130			01/07/24 13:08	01/09/24 06:53	1
13C2 PFDA	85		70 - 130			01/07/24 13:08	01/09/24 06:53	1
13C3-GenX	78		70 - 130			01/07/24 13:08	01/09/24 06:53	1

**Lab Sample ID: LCS 380-70612/19-A**  
**Matrix: Water**  
**Analysis Batch: 70783**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 70612**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	24.3		ng/L		97	70 - 130
Perfluorooctanesulfonic acid (PFOS)	25.1	26.1		ng/L		104	70 - 130
Perfluoroundecanoic acid (PFUnA)	25.1	24.8		ng/L		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	26.4		ng/L		105	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	27.1		ng/L		108	70 - 130
Perfluorohexanoic acid (PFHxA)	25.1	25.4		ng/L		102	70 - 130
Perfluorododecanoic acid (PFDoA)	25.1	24.6		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	25.1	26.6		ng/L		106	70 - 130
Perfluorodecanoic acid (PFDA)	25.1	26.8		ng/L		107	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	25.1	25.6		ng/L		102	70 - 130
Perfluorobutanesulfonic acid (PFBS)	25.1	23.5		ng/L		94	70 - 130
Perfluoroheptanoic acid (PFHpA)	25.1	25.7		ng/L		102	70 - 130
Perfluorononanoic acid (PFNA)	25.1	25.8		ng/L		103	70 - 130

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# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: LCS 380-70612/19-A**  
**Matrix: Water**  
**Analysis Batch: 70783**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 70612**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotetradecanoic acid (PFTA)	25.1	24.5		ng/L		98	70 - 130
Perfluorotridecanoic acid (PFTrDA)	25.1	26.5		ng/L		106	70 - 130
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid(9Cl-PF3ONS)	25.1	25.8		ng/L		103	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	25.1	23.5		ng/L		94	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	25.1	27.0		ng/L		108	70 - 130
<b>LCS LCS</b>							
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				
d5-NEtFOSAA	100		70 - 130				
13C2 PFHxA	101		70 - 130				
13C2 PFDA	100		70 - 130				
13C3-GenX	98		70 - 130				

**Lab Sample ID: MRL 380-70612/18-A**  
**Matrix: Water**  
**Analysis Batch: 70783**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 70612**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.05	J	ng/L		102	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.14	J	ng/L		107	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.05	J	ng/L		103	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.20	J	ng/L		110	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.30	J	ng/L		115	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.10	J	ng/L		105	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.02	J	ng/L		101	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.36	J	ng/L		118	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.35	J	ng/L		117	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.12	J	ng/L		106	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	1.84	J	ng/L		92	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.15	J	ng/L		107	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.23	J	ng/L		111	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	2.21	J	ng/L		110	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	2.24	J	ng/L		112	50 - 150
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.14	J	ng/L		107	50 - 150

# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: MRL 380-70612/18-A**  
**Matrix: Water**  
**Analysis Batch: 70783**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 70612**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	1.95	J	ng/L		97	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.25	J	ng/L		112	50 - 150
<b>Surrogate</b>	<b>MRL %Recovery</b>	<b>MRL Qualifier</b>	<b>Limits</b>				
d5-NEtFOSAA	105		70 - 130				
13C2 PFHxA	99		70 - 130				
13C2 PFDA	100		70 - 130				
13C3-GenX	97		70 - 130				

**Lab Sample ID: 380-77376-A-1-B MS**  
**Matrix: Water**  
**Analysis Batch: 70783**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 70612**

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		25.6	25.9		ng/L		101	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		25.6	28.7		ng/L		106	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		25.6	24.3		ng/L		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.6	29.1		ng/L		114	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.6	31.4		ng/L		123	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		25.6	27.5		ng/L		104	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		25.6	23.5		ng/L		92	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		25.6	27.8		ng/L		106	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		25.6	26.7		ng/L		104	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		25.6	28.7		ng/L		108	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		25.6	28.0		ng/L		105	70 - 130
Perfluoroheptanoic acid (PFHpA)	2.0		25.6	25.7		ng/L		100	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		25.6	26.3		ng/L		103	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		25.6	23.0		ng/L		90	70 - 130
Perfluorotridecanoic acid (PFTrDA)	<2.0		25.6	26.5		ng/L		104	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.6	27.5		ng/L		107	70 - 130
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.6	25.1		ng/L		98	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.6	26.5		ng/L		103	70 - 130

# QC Sample Results

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

Job ID: 380-77419-1

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

**Lab Sample ID: 380-77376-A-1-B MS**  
**Matrix: Water**  
**Analysis Batch: 70783**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 70612**

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
d5-NEtFOSAA	109		70 - 130
13C2 PFHxA	105		70 - 130
13C2 PFDA	100		70 - 130
13C3-GenX	97		70 - 130

**Lab Sample ID: 380-77419-1 DU**  
**Matrix: Water**  
**Analysis Batch: 70783**

**Client Sample ID: HALAWA WELLS UNIT 1**  
**Prep Type: Total/NA**  
**Prep Batch: 70612**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	RPD	Limit
	Result	Qualifier	Result	Qualifier					
Hexafluoropropylene Oxide	<2.0		<2.0		ng/L		NC		30
Dimer Acid (HFPO-DA/GenX)									
Perfluorooctanesulfonic acid (PFOS)	2.2		2.19		ng/L		3		30
Perfluoroundecanoic acid (PFUnA)	<2.0		<2.0		ng/L		NC		30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		<2.0		ng/L		NC		30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		<2.0		ng/L		NC		30
Perfluorohexanoic acid (PFHxA)	2.0		<2.0		ng/L		NC		30
Perfluorododecanoic acid (PFDoA)	<2.0		<2.0		ng/L		NC		30
Perfluorooctanoic acid (PFOA)	2.0		<2.0		ng/L		NC		30
Perfluorodecanoic acid (PFDA)	<2.0		<2.0		ng/L		NC		30
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.42		ng/L		2		30
Perfluorobutanesulfonic acid (PFBS)	<2.0		<2.0		ng/L		NC		30
Perfluoroheptanoic acid (PFHpA)	<2.0		<2.0		ng/L		NC		30
Perfluorononanoic acid (PFNA)	<2.0		<2.0		ng/L		NC		30
Perfluorotetradecanoic acid (PFTA)	<2.0		<2.0		ng/L		NC		30
Perfluorotridecanoic acid (PFTrDA)	<2.0		<2.0		ng/L		NC		30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		<2.0		ng/L		NC		30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		<2.0		ng/L		NC		30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		<2.0		ng/L		NC		30

Surrogate	DU DU		Limits
	%Recovery	Qualifier	
d5-NEtFOSAA	105		70 - 130
13C2 PFHxA	106		70 - 130
13C2 PFDA	99		70 - 130
13C3-GenX	115		70 - 130

# QC Association Summary

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

Job ID: 380-77419-1

## LCMS

### Prep Batch: 70612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-77419-1	HALAWA WELLS UNIT 1	Total/NA	Water	537.1 DW	
380-77419-3	FB: HALAWA WELLS UNIT 1	Total/NA	Water	537.1 DW	
MBL 380-70612/17-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-70612/19-A	Lab Control Sample	Total/NA	Water	537.1 DW	
MRL 380-70612/18-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-77376-A-1-B MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-77419-1 DU	HALAWA WELLS UNIT 1	Total/NA	Water	537.1 DW	

### Prep Batch: 70655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-77419-3	FB: HALAWA WELLS UNIT 1	Total/NA	Water	533	
MBL 380-70655/11-A	Method Blank	Total/NA	Water	533	
LCS 380-70655/13-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-70655/12-A	Lab Control Sample	Total/NA	Water	533	
380-77427-B-1-A MS	Matrix Spike	Total/NA	Water	533	
380-77427-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	

### Analysis Batch: 70783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-77419-1	HALAWA WELLS UNIT 1	Total/NA	Water	537.1	70612
380-77419-3	FB: HALAWA WELLS UNIT 1	Total/NA	Water	537.1	70612
MBL 380-70612/17-A	Method Blank	Total/NA	Water	537.1	70612
LCS 380-70612/19-A	Lab Control Sample	Total/NA	Water	537.1	70612
MRL 380-70612/18-A	Lab Control Sample	Total/NA	Water	537.1	70612
380-77376-A-1-B MS	Matrix Spike	Total/NA	Water	537.1	70612
380-77419-1 DU	HALAWA WELLS UNIT 1	Total/NA	Water	537.1	70612

### Analysis Batch: 70844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-77419-3	FB: HALAWA WELLS UNIT 1	Total/NA	Water	533	70655
MBL 380-70655/11-A	Method Blank	Total/NA	Water	533	70655
LCS 380-70655/13-A	Lab Control Sample	Total/NA	Water	533	70655
MRL 380-70655/12-A	Lab Control Sample	Total/NA	Water	533	70655
380-77427-B-1-A MS	Matrix Spike	Total/NA	Water	533	70655
380-77427-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	70655

### Prep Batch: 71342

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-77419-1	HALAWA WELLS UNIT 1	Total/NA	Water	533	
MBL 380-71342/21-A	Method Blank	Total/NA	Water	533	
LCS 380-71342/23-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-71342/22-A	Lab Control Sample	Total/NA	Water	533	
380-77931-AU-1-A MS	Matrix Spike	Total/NA	Water	533	
380-77931-AV-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	

### Analysis Batch: 71524

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-77419-1	HALAWA WELLS UNIT 1	Total/NA	Water	533	71342
MBL 380-71342/21-A	Method Blank	Total/NA	Water	533	71342
LCS 380-71342/23-A	Lab Control Sample	Total/NA	Water	533	71342
MRL 380-71342/22-A	Lab Control Sample	Total/NA	Water	533	71342

# QC Association Summary

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

Job ID: 380-77419-1

## LCMS (Continued)

### Analysis Batch: 71524 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-77931-AU-1-A MS	Matrix Spike	Total/NA	Water	533	71342
380-77931-AV-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	71342

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# Lab Chronicle

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

Job ID: 380-77419-1

## Client Sample ID: HALAWA WELLS UNIT 1

Lab Sample ID: 380-77419-1

Date Collected: 01/03/24 11:11

Matrix: Water

Date Received: 01/05/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			71342	XTD8	EA POM	01/12/24 05:26
Total/NA	Analysis	533		1	71524	SZ9R	EA POM	01/13/24 17:06
Total/NA	Prep	537.1 DW			70612	A5GB	EA POM	01/07/24 13:08
Total/NA	Analysis	537.1		1	70783	SZ9R	EA POM	01/09/24 07:40

## Client Sample ID: FB: HALAWA WELLS UNIT 1

Lab Sample ID: 380-77419-3

Date Collected: 01/03/24 11:11

Matrix: Water

Date Received: 01/05/24 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			70655	XTD8	EA POM	01/08/24 05:00
Total/NA	Analysis	533		1	70844	R6YA	EA POM	01/09/24 16:11
Total/NA	Prep	537.1 DW			70612	A5GB	EA POM	01/07/24 13:08
Total/NA	Analysis	537.1		1	70783	SZ9R	EA POM	01/09/24 10:14

### 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: 380-77419-1

## 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	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)
533	533	Water	Perfluoropentanoic acid (PFPeA)
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

Job ID: 380-77419-1

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: 380-77419-1

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Lab Sample ID	Client Sample ID	Matrix	Collected	Received
380-77419-1	HALAWA WELLS UNIT 1	Water	01/03/24 11:11	01/05/24 09:20
380-77419-3	FB: HALAWA WELLS UNIT 1	Water	01/03/24 11:11	01/05/24 09:20

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# Chain of Custody Record



Client Information		Lab PM		Carrier Tracking No(s)		COC No	
Client Contact: Dr Ron Fenstermacher City and County of Honolulu		Arada, Rachelle E-Mail: <a href="mailto:Rachelle.Arada@et.eurofins.com">Rachelle.Arada@et.eurofins.com</a>		State of Origin		Page 1 of 2 Job #	
Address: 630 South Beretania St. Chemistry Lab Honolulu State, Zip Hawaii 96843 Phone 808-748-5841 Email RFENSTERMACHER@hbws.org		Due Date Requested: TAT Requested (days): <b>Standard</b> Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No PO #: C20525101 exp 05312023 WO #: Project #: 38001111 SSOW#		Analysis Requested		Preservation Codes: M - Hexane N - None O - AshtO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecylhydrate U - Acetone V - MCAA W - pH 4-5 Y - Tritama Z - other (specify) ammonium acetate	
Project Name: RED HILL/HBWS Sites Event Desc. RUSH Weekly Red Hill Site: Hawaii		Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> SUBCONTRACT - 625 PAH Physis LL (EAL) + TICS SUBCONTRACT - 6015 Gas (Purgeable) LL (EAL) SUBCONTRACT - 6015 Diesel LL (EAL) and Motor Oil SUBCONTRACT - (MOD) 525 plus Plus TICs SUBCONTRACT - 6015 Gas (Purgeable) LL (EAL) SUBCONTRACT - 6015 Gas (Purgeable) LL (EAL) SUBCONTRACT - 637.1 DW_PREC - 637.1 Full List 633 - All Analytes		Total Number of Containers		Special Instructions/Note: Temp blank: 1°C	
Sample Identification HALAWA WELLS UNIT 1 TB HALAWA WELLS UNIT 1		Sample Date January 3, 2024 January 3, 2024		Sample Time 1111 1111		Sample Type (C=Comp, G=grab) G G	
Matrix (W=water, S=solid, O=waste/oil, BT=tissue, A=air) Water Water		Preservation Code: 380-77419 COC		QR Code		Special Instructions/Note: Temp blank: 1°C	
Possible Hazard Identification <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							
Deliverable Requested I, II, III, IV, Other (specify)							
Empty Kit Relinquished by: [Redacted] Relinquished by: Lesli Lasa Relinquished by: [Redacted] Relinquished by: [Redacted]							
Date: 1-4-2024 1200 Date/Time: 1-4-2024 1200 Date/Time: [Redacted] Date/Time: [Redacted]							
Method of Shipment: 157 Ex 7742 8 1566 Date/Time: 01/03/2024 11:24 Date/Time: [Redacted]							
Company: HBWS Company: [Redacted] Company: [Redacted]							
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: 7511030-01-020 Cooler Temperature(s) °C and Other Remarks: 7511030-01-020							



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

# Chain of Custody Record



Environment Testing  
 America

<b>Client Information</b> Client Contact: Dr. Ron Fenstermacher Phone: 808-748-5840 City and County of Honolulu		Lab PM: Arada, Rachelle E-Mail: Rachelle.Arada@et.eurofinsus.com		Carrier Tracking No(s): State of Origin:		COC No: Page: Page 2 of 2 Job #:	
Address: 630 South Beretania St. Chemistry Lab City: Honolulu State, Zip: Hawaii 96843 Phone: 808-748-5841 Email: RFENSTERMACHER@hbws.org		PWSID: Due Date Requested: TAT Requested (days): Standard Compliance Project: Δ Yes Δ No PO #: C20525101 exp 05312023 WO #:		Analysis Requested: SUBCONTRACT - 625 PAH Physis LL (EAL) + TCS SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL) SUBCONTRACT - 8015 Diesel LL (EAL) and Motor Oil SUBCONTRACT - (MOD) 525 plus Plus TCS SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL) 533 - All Analytes 537.1_DW_PREC - 537.1 Full List		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 Other: ammonium acetate	
Project Name: RED HILL/HBWS Sites Event Desc: RUSH Weekly Red Hill Site: Hawaii		Project #: 38001111 SSOV#:		Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Total Number of Containers <input checked="" type="checkbox"/> Special Instructions/Note:		Matrix (W=water, S=solid, O=wastefoil, BT=tissue, A=APF)	
Sample Identification Sample Date: January 3, 2024 Sample Time: 11:11 Sample Type (C=Comp, G=grab): G Preservation Code:		Sample Date: January 3, 2024 Sample Time: 1111 Sample Type: Water Preservation Code:		Matrix: Water Preservation Code:		Special Instructions/Note: Temp blank: 10C	
Possible Hazard Identification <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		Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:	
Empty Kit Relinquished by: Lesli Laaul Relinquished by:		Date: 1-4-2024 1200 Date/Time:		Method of Shipment:		Date/Time:	
Relinquished by:		Date/Time:		Date/Time:		Date/Time:	
Relinquished by:		Date/Time:		Date/Time:		Date/Time:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No:		Cooler Temperature(s) °C and Other Remarks: (75TA) 0.3... 0.1° - 0.2°		Ver: 01/16 2019	





**Chain of Custody Record**



<b>Client Information (Sub Contract Lab)</b>			Sampler:		Lab PM: Arada, Rachele		Carrier Tracking No(s):		COC No: 380-98572.1				
Client Contact: Shipping/Receiving			Phone:		E-Mail: Rachele.Arada@et.eurofinsus.com		State of Origin: Hawaii		Page: Page 1 of 1				
Company: Eurofins Environment Testing Southwest,					Accreditations Required (See note): State - Hawaii					Job #: 380-77419-1			
Address: 2841 Dow Avenue, Suite 100,			Due Date Requested: 1/25/2024		<b>Analysis Requested</b>					Preservation Co			
City: Tustin			TAT Requested (days):							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		Other:	
State, Zip: CA, 92780			PO #:		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		Total Number of containers				
Phone: 714-895-5494(Tel)			WO #:						8015B_GRO_LL5030C (MOD) GRO 8015B_DRO_LL_CS9510C_LL_HNL Ranges: C10-C24/C24-C36/C8-C18 8015B_GRO_LL5030C GRO		380-77419 Chain of Custody		
Email:			Project #: 38001111		Project #: 38001111		SSOW#:		Other:				
Project Name: RED-HILL			SSOW#:		Site: Honolulu BWS Sites				Special Instructions/NOTE:				
<b>Sample Identification - Client ID (Lab ID)</b>			<b>Sample Date</b>	<b>Sample Time</b>	<b>Sample Type (C=comp, G=grab)</b>	<b>Matrix (W=wast, S=soil, O=waste/oil, BT=Tissue, A=Air)</b>	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO_LL5030C (MOD) GRO	8015B_DRO_LL_CS9510C_LL_HNL Ranges: C10-C24/C24-C36/C8-C18	8015B_GRO_LL5030C GRO	Total Number of containers	
HALAWA WELLS UNIT 1 (380-77419-1)			1/3/24	11:11 Hawaiian	Water				X	X		6	MRLs are needed., initial volume (500ml) and final volume (2ml). MRLs are needed.
TB: HALAWA WELLS UNIT 1 (380-77419-2)			1/3/24	11:11 Hawaiian	Water						X	2	MRLs are needed.

Note: Since laboratory accreditations are subject to change, Eurofins Eaton Analytical, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Eaton Analytical, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Eaton Analytical, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Eaton Analytical, LLC.

<b>Possible Hazard Identification</b>				<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>			
Unconfirmed				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2		Special Instructions/QC Requirements:			
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:			
Relinquished by: <i>Jahn Ibrahim</i>		Date/Time: <i>1/5/24 1645</i>	Company: <i>CSA</i>	Received by: <i>Jahn Ibrahim</i>		Date/Time: <i>01/05/24 16:45</i>	Company: <i>DCS</i>
Relinquished by: <i>Jahn Ibrahim</i>		Date/Time: <i>01/05/24 17:40</i>	Company: <i>DCS</i>	Received by: <i>[Signature]</i>		Date/Time: <i>1-5-24 17:40</i>	Company: <i>EC</i>
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			

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# Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-77419-1

**Login Number: 77419**  
**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	

