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ANALYTICAL REPORT

PREPARED FOR

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City & County of Honolulu
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JOB DESCRIPTION

RED-HILL
RUSH Weekly Red Hill

JOB NUMBER

380-67025-1

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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Definitions/Glossary

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

Job ID: 380-67025-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
^3+	Reporting Limit Check Standard is outside acceptance limits, high biased
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA TICs

Qualifier	Qualifier Description
J	Indicates an Estimated Value for TICs
N	Presumptive evidence of material.
T	Result is a tentatively identified compound (TIC) and an estimated value.

LCMS

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
S1-	Surrogate recovery exceeds control limits, low biased.

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/Site: RED-HILL

Job ID: 380-67025-1

Job ID: 380-67025-1

Laboratory: Eurofins Eaton Analytical Pomona

Narrative

Job Narrative 380-67025-1

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 10/13/2023 9:45 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 4.2°C

Receipt Exceptions

PFAS methods are requested twice on the COC. Likely the result of a COC-generated error. Method 625 should be in place of one of these methods. Client provided updated COC.

GC/MS Semi VOA

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

PFAS

Method 537.1_DW_PREC: Surrogate recovery was outside acceptance limits for the following matrix spike (MS) sample: (380-66500-B-1-A MS). The parent sample's surrogate recovery was within limits.

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: 380-67025-1

Client Sample ID: HALAWA WELLS PUMP 1
PWSID Number: HI0000331

Lab Sample ID: 380-67025-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.0	ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	2.2		2.0	ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.4		2.0	ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		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)	2.5		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)	2.7		2.0	ng/L	1		537.1	Total/NA

Client Sample ID: FB: HALAWA WELLS PUMP 1
PWSID Number: HI0000331

Lab Sample ID: 380-67025-3

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: 380-67025-1

Client Sample ID: HALAWA WELLS PUMP 1

Lab Sample ID: 380-67025-1

Date Collected: 10/12/23 11:00

Matrix: Drinking Water

Date Received: 10/13/23 09:45

PWSID Number: HI0000331

Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
2,4'-DDD	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
2,4'-DDE	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
2,4'-DDT	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
2,4-Dinitrotoluene	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
2,6-Dinitrotoluene	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
2-Methylnaphthalene	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
4,4'-DDD	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
4,4'-DDE	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
4,4'-DDT	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Acenaphthene	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Acenaphthylene	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Acetochlor	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Alachlor	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
alpha-BHC	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
alpha-Chlordane	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Anthracene	<0.020		0.020	ug/L		10/16/23 12:00	10/18/23 15:26	1
Atrazine	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Benz(a)anthracene	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Benzo[a]pyrene	<0.020		0.020	ug/L		10/16/23 12:00	10/18/23 15:26	1
Benzo[b]fluoranthene	<0.020		0.020	ug/L		10/16/23 12:00	10/18/23 15:26	1
Benzo[g,h,i]perylene	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Benzo[k]fluoranthene	<0.020		0.020	ug/L		10/16/23 12:00	10/18/23 15:26	1
beta-BHC	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Bis(2-ethylhexyl) phthalate	<0.59		0.59	ug/L		10/16/23 12:00	10/18/23 15:26	1
Bromacil	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Butachlor	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Butylbenzylphthalate	<0.49		0.49	ug/L		10/16/23 12:00	10/18/23 15:26	1
Chlorobenzilate	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Chloroneb	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Chlorothalonil (Draconil, Bravo)	<0.099	^3+	0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Chlorpyrifos	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Chrysene	<0.020		0.020	ug/L		10/16/23 12:00	10/18/23 15:26	1
delta-BHC	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Di(2-ethylhexyl)adipate	<0.59		0.59	ug/L		10/16/23 12:00	10/18/23 15:26	1
Dibenz(a,h)anthracene	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Diclorvos (DDVP)	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Dieldrin	<0.20		0.20	ug/L		10/16/23 12:00	10/18/23 15:26	1
Diethylphthalate	<0.49		0.49	ug/L		10/16/23 12:00	10/18/23 15:26	1
Dimethylphthalate	<0.49		0.49	ug/L		10/16/23 12:00	10/18/23 15:26	1
Di-n-butyl phthalate	<0.99		0.99	ug/L		10/16/23 12:00	10/18/23 15:26	1
Di-n-octyl phthalate	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Endosulfan I (Alpha)	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Endosulfan II (Beta)	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Endosulfan sulfate	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Endrin	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Endrin aldehyde	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
EPTC	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Fluoranthene	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1

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Client Sample Results

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

Job ID: 380-67025-1

Client Sample ID: HALAWA WELLS PUMP 1

Lab Sample ID: 380-67025-1

Date Collected: 10/12/23 11:00

Matrix: Drinking Water

Date Received: 10/13/23 09:45

PWSID Number: HI0000331

Method: EPA 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
gamma-Chlordane	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Heptachlor	<0.040		0.040	ug/L		10/16/23 12:00	10/18/23 15:26	1
Heptachlor epoxide (isomer B)	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Hexachlorobenzene	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Hexachlorocyclopentadiene	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Indeno[1,2,3-cd]pyrene	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Isophorone	<0.49		0.49	ug/L		10/16/23 12:00	10/18/23 15:26	1
Lindane	<0.040		0.040	ug/L		10/16/23 12:00	10/18/23 15:26	1
Malathion	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Methoxychlor	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Metolachlor	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Molinate	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Naphthalene	<0.30		0.30	ug/L		10/16/23 12:00	10/18/23 15:26	1
Parathion	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Pendimethalin (Penoxaline)	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Phenanthrene	<0.040		0.040	ug/L		10/16/23 12:00	10/18/23 15:26	1
Propachlor	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Pyrene	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Simazine	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Terbacil	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Terbutylazine	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1
Thiobencarb	<0.20		0.20	ug/L		10/16/23 12:00	10/18/23 15:26	1
Total Permethrin (mixed isomers)	<0.20		0.20	ug/L		10/16/23 12:00	10/18/23 15:26	1
trans-Nonachlor	<0.049		0.049	ug/L		10/16/23 12:00	10/18/23 15:26	1
Trifluralin	<0.099		0.099	ug/L		10/16/23 12:00	10/18/23 15:26	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L			N/A	10/16/23 12:00	10/18/23 15:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Nitro-m-xylene	98		70 - 130	10/16/23 12:00	10/18/23 15:26	1
Perylene-d12	93		70 - 130	10/16/23 12:00	10/18/23 15:26	1
Triphenylphosphate	99		70 - 130	10/16/23 12:00	10/18/23 15:26	1

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		10/31/23 11:52	11/02/23 13:22	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1

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Client Sample Results

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

Job ID: 380-67025-1

Client Sample ID: HALAWA WELLS PUMP 1

Lab Sample ID: 380-67025-1

Date Collected: 10/12/23 11:00

Matrix: Drinking Water

Date Received: 10/13/23 09:45

PWSID Number: HI0000331

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	2.2		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluorooctanesulfonic acid (PFOS)	2.4		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluorooctanoic acid (PFOA)	2.2		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluoropentanoic acid (PFPeA)	2.5		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:22	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	107		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C6 PFDA	103		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C5 PFHxA	100		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C4 PFHpA	103		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C8 PFOA	103		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C9 PFNA	105		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C7 PFUnA	103		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C2 PFDoA	101		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C4 PFBA	98		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C5 PFPeA	109		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C3 PFBS	99		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C3 PFHxS	100		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C8 PFOS	103		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C2-4:2-FTS	148		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C2-6:2-FTS	127		50 - 200	10/31/23 11:52	11/02/23 13:22	1
13C2-8:2-FTS	125		50 - 200	10/31/23 11:52	11/02/23 13:22	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		10/18/23 08:22	10/21/23 08:53	1
Perfluorooctanesulfonic acid (PFOS)	2.2		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
N-methylperfluorooctanesulfonamide cetic acid (NMeFOSAA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-67025-1

Client Sample ID: HALAWA WELLS PUMP 1

Lab Sample ID: 380-67025-1

Date Collected: 10/12/23 11:00

Matrix: Drinking Water

Date Received: 10/13/23 09:45

PWSID Number: HI0000331

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorohexanoic acid (PFHxA)	2.5		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorooctanoic acid (PFOA)	2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorohexanesulfonic acid (PFHxS)	2.7		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		10/18/23 08:22	10/21/23 08:53	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	82		70 - 130			10/18/23 08:22	10/21/23 08:53	1
13C2 PFHxA	102		70 - 130			10/18/23 08:22	10/21/23 08:53	1
13C2 PFDA	91		70 - 130			10/18/23 08:22	10/21/23 08:53	1
13C3-GenX	95		70 - 130			10/18/23 08:22	10/21/23 08:53	1

Client Sample ID: FB: HALAWA WELLS PUMP 1

Lab Sample ID: 380-67025-3

Date Collected: 10/12/23 11:00

Matrix: Water

Date Received: 10/13/23 09:45

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-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-67025-1

Client Sample ID: FB: HALAWA WELLS PUMP 1

Lab Sample ID: 380-67025-3

Date Collected: 10/12/23 11:00

Matrix: Water

Date Received: 10/13/23 09:45

PWSID Number: HI0000331

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0	ng/L		10/31/23 11:52	11/02/23 13:32	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C6 PFDA	104		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C5 PFHxA	103		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C4 PFHpA	102		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C8 PFOA	104		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C9 PFNA	106		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C7 PFUnA	101		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C2 PFDoA	99		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C4 PFBA	97		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C5 PFPeA	111		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C3 PFBS	95		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C3 PFHxS	99		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C8 PFOS	101		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C2-4:2-FTS	136		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C2-6:2-FTS	125		50 - 200			10/31/23 11:52	11/02/23 13:32	1
13C2-8:2-FTS	126		50 - 200			10/31/23 11:52	11/02/23 13:32	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		10/17/23 05:05	10/20/23 10:40	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1

Eurofins Eaton Analytical Pomona

Client Sample Results

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

Job ID: 380-67025-1

Client Sample ID: FB: HALAWA WELLS PUMP 1

Lab Sample ID: 380-67025-3

Date Collected: 10/12/23 11:00

Matrix: Water

Date Received: 10/13/23 09:45

PWSID Number: HI0000331

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		10/17/23 05:05	10/20/23 10:40	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	94		70 - 130			10/17/23 05:05	10/20/23 10:40	1
13C2 PFHxA	105		70 - 130			10/17/23 05:05	10/20/23 10:40	1
13C2 PFDA	111		70 - 130			10/17/23 05:05	10/20/23 10:40	1
13C3-GenX	97		70 - 130			10/17/23 05:05	10/20/23 10:40	1

Action Limit Summary

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

Job ID: 380-67025-1

Client Sample ID: HALAWA WELLS PUMP 1

Lab Sample ID: 380-67025-1

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	RL	Method	Prep Type
				Limit			
Alachlor	<0.049		ug/L	2	0.049	525.2	Total/NA
Atrazine	<0.049		ug/L	3	0.049	525.2	Total/NA
Benzo[a]pyrene	<0.020		ug/L	0.2	0.020	525.2	Total/NA
Bis(2-ethylhexyl) phthalate	<0.59		ug/L	6	0.59	525.2	Total/NA
Di(2-ethylhexyl)adipate	<0.59		ug/L	400	0.59	525.2	Total/NA
Endrin	<0.099		ug/L	2	0.099	525.2	Total/NA
Heptachlor	<0.040		ug/L	0.4	0.040	525.2	Total/NA
Heptachlor epoxide (isomer B)	<0.049		ug/L	0.2	0.049	525.2	Total/NA
Hexachlorobenzene	<0.049		ug/L	1	0.049	525.2	Total/NA
Hexachlorocyclopentadiene	<0.049		ug/L	50	0.049	525.2	Total/NA
Lindane	<0.040		ug/L	0.2	0.040	525.2	Total/NA
Methoxychlor	<0.099		ug/L	40	0.099	525.2	Total/NA
Simazine	<0.049		ug/L	4	0.049	525.2	Total/NA

Surrogate Summary

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		2NMX (70-130)	PRY (70-130)	TPP (70-130)
380-67025-1	HALAWA WELLS PUMP 1	98	93	99

Surrogate Legend
 2NMX = 2-Nitro-m-xylene
 PRY = Perylene-d12
 TPP = Triphenylphosphate

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		2NMX (70-130)	PRY (70-130)	TPP (70-130)
380-66624-Z-1-A MS	Matrix Spike	99	95	101
380-66633-Z-1-A DU	Duplicate	98	91	98
LCS 380-59599/23-A	Lab Control Sample	99	91	99
LCS 380-59599/24-A	Lab Control Sample Dup	100	93	98
MB 380-59599/21-A	Method Blank	98	92	95
MRL 380-59599/22-A	Lab Control Sample	99	90	95

Surrogate Legend
 2NMX = 2-Nitro-m-xylene
 PRY = Perylene-d12
 TPP = Triphenylphosphate

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

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-67025-1	HALAWA WELLS PUMP 1	82	102	91	95

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

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

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-66500-B-1-A MS	Matrix Spike	55 S1-	125	113	116
380-66500-C-1-A MSD	Matrix Spike Duplicate	102	120	112	110
380-66846-L-1-A MSD	Matrix Spike Duplicate	98	115	109	103
380-66846-M-1-A MS	Matrix Spike	88	101	104	94
380-67025-3	FB: HALAWA WELLS PUMP 1	94	105	111	97
LCS 380-59769/25-A	Lab Control Sample	103	123	112	107
LCS 380-59976/25-A	Lab Control Sample	97	110	109	102

Surrogate Summary

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

Job ID: 380-67025-1

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

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)
LCSD 380-59769/26-A	Lab Control Sample Dup	104	109	112	104
LCSD 380-59976/26-A	Lab Control Sample Dup	96	101	101	94
MBL 380-59769/23-A	Method Blank	125	122	120	108
MBL 380-59976/23-A	Method Blank	89	107	98	92
MRL 380-59769/24-A	Lab Control Sample	113	111	116	101
MRL 380-59976/24-A	Lab Control Sample	88	96	98	85

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: 380-67025-1

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

Matrix: Drinking Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (50-200)	C6PFDA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	13C7PUA (50-200)	PFDaA (50-200)
380-67025-1	HALAWA WELLS PUMP 1	107	103	100	103	103	105	103	101

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)
380-67025-1	HALAWA WELLS PUMP 1	98	109	99	100	103	148	127	125

Surrogate Legend

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

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (50-200)	C6PFDA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	13C7PUA (50-200)	PFDaA (50-200)
380-67025-3	FB: HALAWA WELLS PUMP 1	92	104	103	102	104	106	101	99
380-68292-A-19-A MS	Matrix Spike	108	94	76	78	89	94	91	95
380-68292-B-19-A MSD	Matrix Spike Duplicate	118	101	85	87	97	102	98	101
LCS 380-61792/23-A	Lab Control Sample	91	99	100	96	100	99	98	96
LCSD 380-61792/24-A	Lab Control Sample Dup	94	97	93	93	94	99	95	95
MBL 380-61792/21-A	Method Blank	92	97	98	95	100	100	94	98
MRL 380-61792/22-A	Lab Control Sample	96	99	98	98	100	100	93	94

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)
380-67025-3	FB: HALAWA WELLS PUMP 1	97	111	95	99	101	136	125	126
380-68292-A-19-A MS	Matrix Spike	81	125	90	92	94	124	146	155
380-68292-B-19-A MSD	Matrix Spike Duplicate	89	136	97	101	101	124	146	166
LCS 380-61792/23-A	Lab Control Sample	96	100	92	96	100	101	106	112
LCSD 380-61792/24-A	Lab Control Sample Dup	93	97	95	95	96	96	98	108
MBL 380-61792/21-A	Method Blank	95	104	94	94	97	99	98	111
MRL 380-61792/22-A	Lab Control Sample	95	103	94	96	95	102	105	111

Surrogate Legend

- HFPODA = 13C3 HFPO-DA

Isotope Dilution Summary

Client: City & County of Honolulu

Project/Site: RED-HILL

Job ID: 380-67025-1

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

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QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 380-59599/21-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 59599

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
1-Methylnaphthalene	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
2,4'-DDD	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
2,4'-DDE	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
2,4'-DDT	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
2,4-Dinitrotoluene	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
2,6-Dinitrotoluene	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
2-Methylnaphthalene	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
4,4'-DDD	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
4,4'-DDE	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
4,4'-DDT	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Acenaphthene	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Acenaphthylene	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Acetochlor	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Alachlor	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
alpha-BHC	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
alpha-Chlordane	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Anthracene	<0.020		0.020	ug/L		10/16/23 10:00	10/18/23 10:44	1
Atrazine	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Benz(a)anthracene	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Benzo[a]pyrene	<0.020		0.020	ug/L		10/16/23 10:00	10/18/23 10:44	1
Benzo[b]fluoranthene	<0.020		0.020	ug/L		10/16/23 10:00	10/18/23 10:44	1
Benzo[g,h,i]perylene	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Benzo[k]fluoranthene	<0.020		0.020	ug/L		10/16/23 10:00	10/18/23 10:44	1
beta-BHC	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Bis(2-ethylhexyl) phthalate	<0.60		0.60	ug/L		10/16/23 10:00	10/18/23 10:44	1
Bromacil	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Butachlor	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Butylbenzylphthalate	<0.50		0.50	ug/L		10/16/23 10:00	10/18/23 10:44	1
Chlorobenzilate	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Chloroneb	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Chlorothalonil (Draconil, Bravo)	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Chlorpyrifos	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Chrysene	<0.020		0.020	ug/L		10/16/23 10:00	10/18/23 10:44	1
delta-BHC	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Di(2-ethylhexyl)adipate	<0.60		0.60	ug/L		10/16/23 10:00	10/18/23 10:44	1
Dibenz(a,h)anthracene	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Diclorvos (DDVP)	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Dieldrin	<0.20		0.20	ug/L		10/16/23 10:00	10/18/23 10:44	1
Diethylphthalate	<0.50		0.50	ug/L		10/16/23 10:00	10/18/23 10:44	1
Dimethylphthalate	<0.50		0.50	ug/L		10/16/23 10:00	10/18/23 10:44	1
Di-n-butyl phthalate	<0.99		0.99	ug/L		10/16/23 10:00	10/18/23 10:44	1
Di-n-octyl phthalate	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Endosulfan I (Alpha)	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Endosulfan II (Beta)	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Endosulfan sulfate	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Endrin	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Endrin aldehyde	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
EPTC	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1

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QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 380-59599/21-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 59599

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoranthene	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Fluorene	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
gamma-Chlordane	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Heptachlor	<0.040		0.040	ug/L		10/16/23 10:00	10/18/23 10:44	1
Heptachlor epoxide (isomer B)	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Hexachlorobenzene	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Hexachlorocyclopentadiene	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Indeno[1,2,3-cd]pyrene	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Isophorone	<0.50		0.50	ug/L		10/16/23 10:00	10/18/23 10:44	1
Lindane	<0.040		0.040	ug/L		10/16/23 10:00	10/18/23 10:44	1
Malathion	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Methoxychlor	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Metolachlor	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Molinate	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Naphthalene	<0.30		0.30	ug/L		10/16/23 10:00	10/18/23 10:44	1
Parathion	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Pendimethalin (Penoxaline)	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Phenanthrene	<0.040		0.040	ug/L		10/16/23 10:00	10/18/23 10:44	1
Propachlor	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Pyrene	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Simazine	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Terbacil	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Terbutylazine	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1
Thiobencarb	<0.20		0.20	ug/L		10/16/23 10:00	10/18/23 10:44	1
Total Permethrin (mixed isomers)	<0.20		0.20	ug/L		10/16/23 10:00	10/18/23 10:44	1
trans-Nonachlor	<0.050		0.050	ug/L		10/16/23 10:00	10/18/23 10:44	1
Trifluralin	<0.099		0.099	ug/L		10/16/23 10:00	10/18/23 10:44	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Unknown	1.07	T J	ug/L		3.20	N/A	10/16/23 10:00	10/18/23 10:44	1
n-Hexadecanoic acid	1.07	T J N	ug/L		5.78	57-10-3	10/16/23 10:00	10/18/23 10:44	1
Octadecanoic acid	0.589	T J N	ug/L		6.45	57-11-4	10/16/23 10:00	10/18/23 10:44	1
1,3-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester	0.571	T J N	ug/L		9.76	137-89-3	10/16/23 10:00	10/18/23 10:44	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Nitro-m-xylene	98		70 - 130	10/16/23 10:00	10/18/23 10:44	1
Perylene-d12	92		70 - 130	10/16/23 10:00	10/18/23 10:44	1
Triphenylphosphate	95		70 - 130	10/16/23 10:00	10/18/23 10:44	1

Lab Sample ID: LCS 380-59599/23-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	1.99	1.95		ug/L		98	70 - 130
2,4'-DDD	1.99	1.77		ug/L		89	70 - 130
2,4'-DDE	1.99	1.81		ug/L		91	70 - 130

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QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 380-59599/23-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4'-DDT	1.99	2.00		ug/L		100	70 - 130
2,4-Dinitrotoluene	1.99	1.67		ug/L		84	70 - 130
2,6-Dinitrotoluene	1.99	1.64		ug/L		83	70 - 130
2-Methylnaphthalene	1.99	2.00		ug/L		101	70 - 130
4,4'-DDD	1.99	2.10		ug/L		105	70 - 130
4,4'-DDE	1.99	1.76		ug/L		88	70 - 130
4,4'-DDT	1.99	2.08		ug/L		105	70 - 130
Acenaphthene	1.99	1.85		ug/L		93	70 - 130
Acenaphthylene	1.99	1.89		ug/L		95	70 - 130
Acetochlor	1.99	2.05		ug/L		103	70 - 130
Alachlor	1.99	1.99		ug/L		100	70 - 130
alpha-BHC	1.99	1.93		ug/L		97	70 - 130
alpha-Chlordane	1.99	1.69		ug/L		85	70 - 130
Anthracene	1.99	1.96		ug/L		99	70 - 130
Atrazine	1.99	2.14		ug/L		108	70 - 130
Benz(a)anthracene	1.99	1.97		ug/L		99	70 - 130
Benzo[a]pyrene	1.99	2.00		ug/L		101	70 - 130
Benzo[b]fluoranthene	1.99	2.03		ug/L		102	70 - 130
Benzo[g,h,i]perylene	1.99	1.71		ug/L		86	70 - 130
Benzo[k]fluoranthene	1.99	1.99		ug/L		100	70 - 130
beta-BHC	1.99	2.10		ug/L		106	70 - 130
Bis(2-ethylhexyl) phthalate	1.99	2.32		ug/L		117	70 - 130
Bromacil	1.99	1.85		ug/L		93	70 - 130
Butachlor	1.99	2.15		ug/L		108	70 - 130
Butylbenzylphthalate	1.99	2.20		ug/L		111	70 - 130
Chlorobenzilate	1.99	2.41		ug/L		121	70 - 130
Chloroneb	1.99	1.85		ug/L		93	70 - 130
Chlorothalonil (Draconil, Bravo)	1.99	1.86		ug/L		93	70 - 130
Chlorpyrifos	1.99	1.98		ug/L		100	70 - 130
Chrysene	1.99	1.97		ug/L		99	70 - 130
delta-BHC	1.99	1.86		ug/L		94	70 - 130
Di(2-ethylhexyl)adipate	1.99	2.52		ug/L		127	70 - 130
Dibenz(a,h)anthracene	1.99	1.97		ug/L		99	70 - 130
Diclorvos (DDVP)	1.99	2.23		ug/L		112	70 - 130
Dieldrin	1.99	1.81		ug/L		91	70 - 130
Diethylphthalate	1.99	2.06		ug/L		104	70 - 130
Dimethylphthalate	1.99	1.99		ug/L		100	70 - 130
Di-n-butyl phthalate	3.98	3.93		ug/L		99	70 - 130
Di-n-octyl phthalate	1.99	1.99		ug/L		100	70 - 130
Endosulfan I (Alpha)	1.99	1.78		ug/L		90	70 - 130
Endosulfan II (Beta)	1.99	1.98		ug/L		100	70 - 130
Endosulfan sulfate	1.99	1.98		ug/L		99	70 - 130
Endrin	1.99	1.98		ug/L		99	70 - 130
Endrin aldehyde	1.99	1.78		ug/L		90	70 - 130
EPTC	1.99	2.08		ug/L		105	70 - 130
Fluoranthene	1.99	2.00		ug/L		101	70 - 130
Fluorene	1.99	2.04		ug/L		103	70 - 130
gamma-Chlordane	1.99	1.72		ug/L		87	70 - 130
Heptachlor	1.99	2.15		ug/L		108	70 - 130

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QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 380-59599/23-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Heptachlor epoxide (isomer B)	1.99	1.74		ug/L		87	70 - 130
Hexachlorobenzene	1.99	1.67		ug/L		84	70 - 130
Hexachlorocyclopentadiene	1.99	1.73		ug/L		87	70 - 130
Indeno[1,2,3-cd]pyrene	1.99	1.96		ug/L		99	70 - 130
Isophorone	1.99	2.33		ug/L		117	70 - 130
Lindane	1.99	2.07		ug/L		104	70 - 130
Malathion	1.99	1.96		ug/L		99	70 - 130
Methoxychlor	1.99	2.27		ug/L		114	70 - 130
Metolachlor	1.99	2.12		ug/L		107	70 - 130
Molinate	1.99	2.14		ug/L		108	70 - 130
Naphthalene	1.99	1.91		ug/L		96	70 - 130
Parathion	1.99	2.27		ug/L		114	70 - 130
Pendimethalin (Penoxaline)	1.99	1.87		ug/L		94	70 - 130
Phenanthrene	1.99	1.96		ug/L		99	70 - 130
Propachlor	1.99	2.18		ug/L		110	70 - 130
Pyrene	1.99	1.97		ug/L		99	70 - 130
Simazine	1.99	2.28		ug/L		114	70 - 130
Terbacil	1.99	2.32		ug/L		117	70 - 130
Terbutylazine	1.99	1.99		ug/L		100	70 - 130
Thiobencarb	1.99	2.40		ug/L		121	70 - 130
trans-Nonachlor	1.99	1.66		ug/L		83	70 - 130
Trifluralin	1.99	1.54		ug/L		77	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Nitro-m-xylene	99		70 - 130
Perylene-d12	91		70 - 130
Triphenylphosphate	99		70 - 130

Lab Sample ID: LCSD 380-59599/24-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1-Methylnaphthalene	1.99	1.96		ug/L		99	70 - 130	1	20
2,4'-DDD	1.99	1.80		ug/L		91	70 - 130	2	20
2,4'-DDE	1.99	1.84		ug/L		92	70 - 130	1	20
2,4'-DDT	1.99	2.00		ug/L		101	70 - 130	0	20
2,4-Dinitrotoluene	1.99	1.69		ug/L		85	70 - 130	1	20
2,6-Dinitrotoluene	1.99	1.73		ug/L		87	70 - 130	5	20
2-Methylnaphthalene	1.99	2.04		ug/L		103	70 - 130	2	20
4,4'-DDD	1.99	2.08		ug/L		105	70 - 130	1	20
4,4'-DDE	1.99	1.74		ug/L		88	70 - 130	1	20
4,4'-DDT	1.99	2.06		ug/L		104	70 - 130	1	20
Acenaphthene	1.99	1.89		ug/L		95	70 - 130	2	20
Acenaphthylene	1.99	1.97		ug/L		99	70 - 130	4	20
Acetochlor	1.99	2.10		ug/L		106	70 - 130	2	20
Alachlor	1.99	2.04		ug/L		103	70 - 130	3	20
alpha-BHC	1.99	1.95		ug/L		98	70 - 130	1	20

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QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 380-59599/24-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
alpha-Chlordane	1.99	1.73		ug/L		87	70 - 130	2	20	
Anthracene	1.99	2.01		ug/L		101	70 - 130	2	20	
Atrazine	1.99	2.16		ug/L		109	70 - 130	1	20	
Benz(a)anthracene	1.99	1.94		ug/L		98	70 - 130	2	20	
Benzo[a]pyrene	1.99	2.13		ug/L		107	70 - 130	6	20	
Benzo[b]fluoranthene	1.99	2.06		ug/L		104	70 - 130	2	20	
Benzo[g,h,i]perylene	1.99	1.88		ug/L		95	70 - 130	9	20	
Benzo[k]fluoranthene	1.99	2.17		ug/L		109	70 - 130	9	20	
beta-BHC	1.99	2.06		ug/L		103	70 - 130	2	20	
Bis(2-ethylhexyl) phthalate	1.99	2.31		ug/L		116	70 - 130	1	20	
Bromacil	1.99	1.91		ug/L		96	70 - 130	3	20	
Butachlor	1.99	2.21		ug/L		111	70 - 130	3	20	
Butylbenzylphthalate	1.99	2.19		ug/L		110	70 - 130	0	20	
Chlorobenzilate	1.99	2.44		ug/L		123	70 - 130	1	20	
Chloroneb	1.99	1.90		ug/L		95	70 - 130	2	20	
Chlorothalonil (Draconil, Bravo)	1.99	1.92		ug/L		96	70 - 130	3	20	
Chlorpyrifos	1.99	2.06		ug/L		104	70 - 130	4	20	
Chrysene	1.99	2.02		ug/L		102	70 - 130	2	20	
delta-BHC	1.99	1.88		ug/L		94	70 - 130	1	20	
Di(2-ethylhexyl)adipate	1.99	2.48		ug/L		125	70 - 130	1	20	
Dibenz(a,h)anthracene	1.99	2.15		ug/L		108	70 - 130	9	20	
Diclorvos (DDVP)	1.99	2.24		ug/L		113	70 - 130	1	20	
Dieldrin	1.99	1.86		ug/L		93	70 - 130	2	20	
Diethylphthalate	1.99	2.10		ug/L		106	70 - 130	2	20	
Dimethylphthalate	1.99	2.03		ug/L		102	70 - 130	2	20	
Di-n-butyl phthalate	3.97	4.02		ug/L		101	70 - 130	2	20	
Di-n-octyl phthalate	1.99	1.90		ug/L		96	70 - 130	5	20	
Endosulfan I (Alpha)	1.99	1.78		ug/L		90	70 - 130	0	20	
Endosulfan II (Beta)	1.99	2.01		ug/L		101	70 - 130	2	20	
Endosulfan sulfate	1.99	2.02		ug/L		102	70 - 130	2	20	
Endrin	1.99	2.02		ug/L		102	70 - 130	2	20	
Endrin aldehyde	1.99	1.64		ug/L		83	70 - 130	8	20	
EPTC	1.99	2.13		ug/L		107	70 - 130	2	20	
Fluoranthene	1.99	1.97		ug/L		99	70 - 130	2	20	
Fluorene	1.99	2.03		ug/L		102	70 - 130	0	20	
gamma-Chlordane	1.99	1.76		ug/L		89	70 - 130	3	20	
Heptachlor	1.99	2.22		ug/L		112	70 - 130	3	20	
Heptachlor epoxide (isomer B)	1.99	1.79		ug/L		90	70 - 130	3	20	
Hexachlorobenzene	1.99	1.73		ug/L		87	70 - 130	4	20	
Hexachlorocyclopentadiene	1.99	1.78		ug/L		90	70 - 130	3	20	
Indeno[1,2,3-cd]pyrene	1.99	2.14		ug/L		108	70 - 130	9	20	
Isophorone	1.99	2.31		ug/L		116	70 - 130	1	20	
Lindane	1.99	2.10		ug/L		106	70 - 130	1	20	
Malathion	1.99	2.03		ug/L		102	70 - 130	4	20	
Methoxychlor	1.99	2.36		ug/L		119	70 - 130	4	20	
Metolachlor	1.99	2.22		ug/L		112	70 - 130	4	20	
Molinate	1.99	2.18		ug/L		110	70 - 130	2	20	
Naphthalene	1.99	1.92		ug/L		97	70 - 130	0	20	
Parathion	1.99	2.32		ug/L		117	70 - 130	2	20	

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 380-59599/24-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Pendimethalin (Penoxaline)	1.99	1.91		ug/L		96	70 - 130	2	20
Phenanthrene	1.99	1.99		ug/L		100	70 - 130	1	20
Propachlor	1.99	2.22		ug/L		112	70 - 130	2	20
Pyrene	1.99	1.94		ug/L		98	70 - 130	2	20
Simazine	1.99	2.22		ug/L		112	70 - 130	2	20
Terbacil	1.99	2.32		ug/L		117	70 - 130	0	20
Terbutylazine	1.99	2.00		ug/L		101	70 - 130	1	20
Thiobencarb	1.99	2.44		ug/L		123	70 - 130	1	20
trans-Nonachlor	1.99	1.72		ug/L		86	70 - 130	3	20
Trifluralin	1.99	1.60		ug/L		80	70 - 130	4	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Nitro-m-xylene	100		70 - 130
Perylene-d12	93		70 - 130
Triphenylphosphate	98		70 - 130

Lab Sample ID: MRL 380-59599/22-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	0.0992	0.106		ug/L		107	50 - 150
2,4'-DDD	0.0992	0.125		ug/L		126	50 - 150
2,4'-DDE	0.0992	0.0921	J	ug/L		93	50 - 150
2,4'-DDT	0.0992	0.0853	J	ug/L		86	50 - 150
2,4-Dinitrotoluene	0.0992	0.0962	J	ug/L		97	50 - 150
2,6-Dinitrotoluene	0.0992	0.102		ug/L		103	50 - 150
2-Methylnaphthalene	0.0992	0.101		ug/L		102	50 - 150
4,4'-DDD	0.0992	0.0931	J	ug/L		94	50 - 150
4,4'-DDE	0.0992	0.0730	J	ug/L		74	50 - 150
4,4'-DDT	0.0992	0.0919	J	ug/L		93	50 - 150
Acenaphthene	0.0992	0.0884	J	ug/L		89	50 - 150
Acenaphthylene	0.0992	0.0873	J	ug/L		88	50 - 150
Acetochlor	0.0496	0.0411	J	ug/L		83	50 - 150
Alachlor	0.0496	0.0459	J	ug/L		93	50 - 150
alpha-BHC	0.0992	0.0939	J	ug/L		95	50 - 150
alpha-Chlordane	0.0248	<0.029		ug/L		81	50 - 150
Anthracene	0.0198	0.0196	J	ug/L		99	50 - 150
Atrazine	0.0496	0.0498	J	ug/L		100	50 - 150
Benz(a)anthracene	0.0496	0.0434	J	ug/L		87	50 - 150
Benzo[a]pyrene	0.0198	0.0185	J	ug/L		93	50 - 150
Benzo[b]fluoranthene	0.0198	0.0191	J	ug/L		96	50 - 150
Benzo[g,h,i]perylene	0.0496	0.0618		ug/L		125	50 - 150
Benzo[k]fluoranthene	0.0198	0.0191	J	ug/L		96	50 - 150
beta-BHC	0.0992	0.101		ug/L		102	50 - 150
Bis(2-ethylhexyl) phthalate	0.595	0.713		ug/L		120	50 - 150
Bromacil	0.0992	0.121		ug/L		122	50 - 150
Butachlor	0.0496	0.0560		ug/L		113	50 - 150

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MRL 380-59599/22-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Butylbenzylphthalate	0.149	0.162	J	ug/L		109	50 - 150
Chlorobenzilate	0.0992	0.120		ug/L		122	50 - 150
Chloroneb	0.0992	0.107		ug/L		108	50 - 150
Chlorothalonil (Draconil, Bravo)	0.0992	0.166	^3+	ug/L		167	50 - 150
Chlorpyrifos	0.0496	0.0558		ug/L		113	50 - 150
Chrysene	0.0198	0.0207		ug/L		104	50 - 150
delta-BHC	0.0992	0.109		ug/L		110	50 - 150
Di(2-ethylhexyl)adipate	0.297	0.426	J	ug/L		143	50 - 150
Dibenz(a,h)anthracene	0.0496	0.0399	J	ug/L		81	50 - 150
Diclorvos (DDVP)	0.0496	0.0645		ug/L		130	50 - 150
Dieldrin	0.0992	0.0914	J	ug/L		92	50 - 150
Diethylphthalate	0.149	0.181	J	ug/L		122	50 - 150
Dimethylphthalate	0.297	0.283	J	ug/L		95	50 - 150
Di-n-butyl phthalate	0.297	0.412	J	ug/L		139	49 - 243
Di-n-octyl phthalate	0.0992	0.107		ug/L		108	50 - 150
Endosulfan I (Alpha)	0.0992	0.0752	J	ug/L		76	50 - 150
Endosulfan II (Beta)	0.0992	0.111		ug/L		112	50 - 150
Endosulfan sulfate	0.0992	0.101		ug/L		102	50 - 150
Endrin	0.0992	0.0977	J	ug/L		98	50 - 150
Endrin aldehyde	0.0992	<0.083		ug/L		68	50 - 150
EPTC	0.0992	0.124		ug/L		125	50 - 150
Fluoranthene	0.0496	0.0458	J	ug/L		92	50 - 150
Fluorene	0.0496	<0.050		ug/L		94	50 - 150
gamma-Chlordane	0.0248	0.0230	J	ug/L		93	50 - 150
Heptachlor	0.0397	0.0467		ug/L		118	50 - 150
Heptachlor epoxide (isomer B)	0.0496	0.0417	J	ug/L		84	50 - 150
Hexachlorobenzene	0.0496	0.0410	J	ug/L		83	50 - 150
Hexachlorocyclopentadiene	0.0496	0.0606		ug/L		122	50 - 150
Indeno[1,2,3-cd]pyrene	0.0496	0.0447	J	ug/L		90	50 - 150
Isophorone	0.0992	0.115	J	ug/L		116	50 - 150
Lindane	0.0397	0.0413		ug/L		104	50 - 150
Malathion	0.0992	0.109		ug/L		110	50 - 150
Methoxychlor	0.0992	0.0999		ug/L		101	50 - 150
Metolachlor	0.0496	0.0485	J	ug/L		98	50 - 150
Molinate	0.0992	0.132		ug/L		133	50 - 150
Naphthalene	0.0992	0.112	J	ug/L		113	50 - 150
Parathion	0.0992	0.105		ug/L		106	50 - 150
Pendimethalin (Penoxaline)	0.0992	0.0863	J	ug/L		87	50 - 150
Phenanthrene	0.0198	0.0222	J	ug/L		112	50 - 150
Propachlor	0.0496	0.0508		ug/L		103	50 - 150
Pyrene	0.0496	0.0463	J	ug/L		93	50 - 150
Simazine	0.0496	0.0448	J	ug/L		90	50 - 150
Terbacil	0.0992	0.122		ug/L		123	50 - 150
Terbutylazine	0.0992	0.102		ug/L		103	50 - 150
Thiobencarb	0.0992	0.119	J	ug/L		120	50 - 150
trans-Nonachlor	0.0248	<0.026		ug/L		80	50 - 150
Trifluralin	0.0992	0.0887	J	ug/L		89	50 - 150

QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MRL 380-59599/22-A
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59599

Surrogate	MRL %Recovery	MRL Qualifier	Limits
2-Nitro-m-xylene	99		70 - 130
Perylene-d12	90		70 - 130
Triphenylphosphate	95		70 - 130

Lab Sample ID: 380-66624-Z-1-A MS
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	<0.099		1.99	1.98		ug/L		99	70 - 130
2,4'-DDD	<0.099		1.99	1.76		ug/L		88	70 - 130
2,4'-DDE	<0.099		1.99	1.79		ug/L		90	70 - 130
2,4'-DDT	<0.099		1.99	1.98		ug/L		100	70 - 130
2,4-Dinitrotoluene	<0.099		1.99	1.86		ug/L		93	70 - 130
2,6-Dinitrotoluene	<0.099		1.99	1.85		ug/L		93	70 - 130
2-Methylnaphthalene	<0.099		1.99	2.05		ug/L		103	70 - 130
4,4'-DDD	<0.099		1.99	2.08		ug/L		105	70 - 130
4,4'-DDE	<0.099		1.99	1.70		ug/L		86	70 - 130
4,4'-DDT	<0.099		1.99	2.05		ug/L		103	70 - 130
Acenaphthene	<0.099		1.99	1.88		ug/L		94	70 - 130
Acenaphthylene	<0.099		1.99	2.08		ug/L		104	70 - 130
Acetochlor	<0.099		1.99	2.04		ug/L		102	70 - 130
Alachlor	<0.050		1.99	2.02		ug/L		102	70 - 130
alpha-BHC	<0.099		1.99	1.97		ug/L		99	70 - 130
alpha-Chlordane	<0.050		1.99	1.71		ug/L		86	70 - 130
Anthracene	<0.020		1.99	1.99		ug/L		100	70 - 130
Atrazine	<0.050		1.99	2.01		ug/L		101	70 - 130
Benz(a)anthracene	<0.050		1.99	1.92		ug/L		96	70 - 130
Benzo[a]pyrene	<0.020		1.99	2.20		ug/L		111	70 - 130
Benzo[b]fluoranthene	<0.020		1.99	2.18		ug/L		110	70 - 130
Benzo[g,h,i]perylene	<0.050		1.99	1.99		ug/L		100	70 - 130
Benzo[k]fluoranthene	<0.020		1.99	2.10		ug/L		106	70 - 130
beta-BHC	<0.099		1.99	2.07		ug/L		104	70 - 130
Bis(2-ethylhexyl) phthalate	<0.59		1.99	2.52		ug/L		127	70 - 130
Bromacil	<0.099		1.99	1.97		ug/L		99	70 - 130
Butachlor	<0.050		1.99	2.28		ug/L		115	70 - 130
Butylbenzylphthalate	<0.50		1.99	2.21		ug/L		111	70 - 130
Chlorobenzilate	<0.099		1.99	2.58		ug/L		130	70 - 130
Chloroneb	<0.099		1.99	1.91		ug/L		96	70 - 130
Chlorothalonil (Draconil, Bravo)	<0.099	^3+	1.99	1.80		ug/L		91	70 - 130
Chlorpyrifos	<0.050		1.99	2.03		ug/L		102	70 - 130
Chrysene	<0.020		1.99	2.04		ug/L		103	70 - 130
delta-BHC	<0.099		1.99	1.84		ug/L		93	70 - 130
Di(2-ethylhexyl)adipate	<0.59		1.99	2.52		ug/L		123	70 - 130
Dibenz(a,h)anthracene	<0.050		1.99	2.28		ug/L		115	70 - 130
Diclorvos (DDVP)	<0.050		1.99	2.19		ug/L		110	70 - 130
Dieldrin	<0.20		1.99	1.82		ug/L		91	70 - 130
Diethylphthalate	<0.50		1.99	2.19		ug/L		110	70 - 130

QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 380-66624-Z-1-A MS
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Dimethylphthalate	<0.50		1.99	2.01		ug/L		101	70 - 130
Di-n-butyl phthalate	<0.99		3.98	3.88		ug/L		98	70 - 130
Di-n-octyl phthalate	<0.099		1.99	2.10		ug/L		106	70 - 130
Endosulfan I (Alpha)	<0.099		1.99	1.74		ug/L		88	70 - 130
Endosulfan II (Beta)	<0.099		1.99	2.08		ug/L		105	70 - 130
Endosulfan sulfate	<0.099		1.99	2.00		ug/L		101	70 - 130
Endrin	<0.099		1.99	1.84		ug/L		93	70 - 130
Endrin aldehyde	<0.099		1.99	1.46		ug/L		73	70 - 130
EPTC	<0.099		1.99	2.24		ug/L		113	70 - 130
Fluoranthene	<0.099		1.99	1.96		ug/L		98	70 - 130
Fluorene	<0.050		1.99	2.05		ug/L		103	70 - 130
gamma-Chlordane	<0.050		1.99	1.76		ug/L		89	70 - 130
Heptachlor	<0.040		1.99	2.18		ug/L		110	70 - 130
Heptachlor epoxide (isomer B)	<0.050		1.99	1.78		ug/L		89	70 - 130
Hexachlorobenzene	<0.050		1.99	1.76		ug/L		89	70 - 130
Hexachlorocyclopentadiene	<0.050		1.99	1.72		ug/L		86	70 - 130
Indeno[1,2,3-cd]pyrene	<0.050		1.99	2.32		ug/L		117	70 - 130
Isophorone	<0.50		1.99	2.36		ug/L		119	70 - 130
Lindane	<0.040		1.99	2.07		ug/L		104	70 - 130
Malathion	<0.099		1.99	2.04		ug/L		102	70 - 130
Methoxychlor	<0.099		1.99	2.49		ug/L		125	70 - 130
Metolachlor	<0.050		1.99	2.29		ug/L		115	70 - 130
Molinate	<0.099		1.99	2.29		ug/L		115	70 - 130
Naphthalene	<0.30		1.99	1.92		ug/L		96	70 - 130
Parathion	<0.099		1.99	2.45		ug/L		123	70 - 130
Pendimethalin (Penoxaline)	<0.099		1.99	2.00		ug/L		101	70 - 130
Phenanthrene	<0.040		1.99	1.95		ug/L		98	70 - 130
Propachlor	<0.050		1.99	2.29		ug/L		115	70 - 130
Pyrene	<0.050		1.99	1.95		ug/L		98	70 - 130
Simazine	<0.050		1.99	2.07		ug/L		104	70 - 130
Terbacil	<0.099		1.99	2.14		ug/L		107	70 - 130
Terbutylazine	<0.099		1.99	1.92		ug/L		96	70 - 130
Thiobencarb	<0.20		1.99	2.43		ug/L		122	70 - 130
trans-Nonachlor	<0.050		1.99	1.68		ug/L		85	70 - 130
Trifluralin	<0.099		1.99	1.71		ug/L		86	70 - 130
				MS	MS				
Surrogate				%Recovery	Qualifier				Limits
2-Nitro-m-xylene				99					70 - 130
Perylene-d12				95					70 - 130
Triphenylphosphate				101					70 - 130

Lab Sample ID: 380-66633-Z-1-A DU
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	RPD	Limit
	Result	Qualifier	Result	Qualifier					
1-Methylnaphthalene	<0.099		<0.099		ug/L			NC	20
2,4'-DDD	<0.099		<0.099		ug/L			NC	20

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 380-66633-Z-1-A DU
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
2,4'-DDE	<0.099		<0.099		ug/L		NC	20
2,4'-DDT	<0.099		<0.099		ug/L		NC	20
2,4-Dinitrotoluene	<0.099		<0.099		ug/L		NC	20
2,6-Dinitrotoluene	<0.099		<0.099		ug/L		NC	20
2-Methylnaphthalene	<0.099		<0.099		ug/L		NC	20
4,4'-DDD	<0.099		<0.099		ug/L		NC	20
4,4'-DDE	<0.099		<0.099		ug/L		NC	20
4,4'-DDT	<0.099		<0.099		ug/L		NC	20
Acenaphthene	<0.099		<0.099		ug/L		NC	20
Acenaphthylene	<0.099		<0.099		ug/L		NC	20
Acetochlor	<0.099		<0.099		ug/L		NC	20
Alachlor	<0.050		<0.050		ug/L		NC	20
alpha-BHC	<0.099		<0.099		ug/L		NC	20
alpha-Chlordane	<0.050		<0.050		ug/L		NC	20
Anthracene	<0.020		<0.020		ug/L		NC	20
Atrazine	<0.050		<0.050		ug/L		NC	20
Benz(a)anthracene	<0.050		<0.050		ug/L		NC	20
Benzo[a]pyrene	<0.020		<0.020		ug/L		NC	20
Benzo[b]fluoranthene	<0.020		<0.020		ug/L		NC	20
Benzo[g,h,i]perylene	<0.050		<0.050		ug/L		NC	20
Benzo[k]fluoranthene	<0.020		<0.020		ug/L		NC	20
beta-BHC	<0.099		<0.099		ug/L		NC	20
Bis(2-ethylhexyl) phthalate	<0.59		<0.60		ug/L		NC	20
Bromacil	<0.099		<0.099		ug/L		NC	20
Butachlor	<0.050		<0.050		ug/L		NC	20
Butylbenzylphthalate	<0.50		<0.50		ug/L		NC	20
Chlorobenzilate	<0.099		<0.099		ug/L		NC	20
Chloroneb	<0.099		<0.099		ug/L		NC	20
Chlorothalonil (Draconil, Bravo)	<0.099	^3+	<0.099		ug/L		NC	20
Chlorpyrifos	<0.050		<0.050		ug/L		NC	20
Chrysene	<0.020		<0.020		ug/L		NC	20
delta-BHC	<0.099		<0.099		ug/L		NC	20
Di(2-ethylhexyl)adipate	<0.59		<0.60		ug/L		NC	20
Dibenz(a,h)anthracene	<0.050		<0.050		ug/L		NC	20
Diclorvos (DDVP)	<0.050		<0.050		ug/L		NC	20
Dieldrin	<0.20		<0.20		ug/L		NC	20
Diethylphthalate	<0.50		<0.50		ug/L		NC	20
Dimethylphthalate	<0.50		<0.50		ug/L		NC	20
Di-n-butyl phthalate	<0.99		<0.99		ug/L		NC	20
Di-n-octyl phthalate	<0.099		<0.099		ug/L		NC	20
Endosulfan I (Alpha)	<0.099		<0.099		ug/L		NC	20
Endosulfan II (Beta)	<0.099		<0.099		ug/L		NC	20
Endosulfan sulfate	<0.099		<0.099		ug/L		NC	20
Endrin	<0.099		<0.099		ug/L		NC	20
Endrin aldehyde	<0.099		<0.099		ug/L		NC	20
EPTC	<0.099		<0.099		ug/L		NC	20
Fluoranthene	<0.099		<0.099		ug/L		NC	20
Fluorene	<0.050		<0.050		ug/L		NC	20
gamma-Chlordane	<0.050		<0.050		ug/L		NC	20

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QC Sample Results

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

Job ID: 380-67025-1

Method: 525.2 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 380-66633-Z-1-A DU
Matrix: Water
Analysis Batch: 59963

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 59599

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Heptachlor	<0.040		<0.040		ug/L		NC	20
Heptachlor epoxide (isomer B)	<0.050		<0.050		ug/L		NC	20
Hexachlorobenzene	<0.050		<0.050		ug/L		NC	20
Hexachlorocyclopentadiene	<0.050		<0.050		ug/L		NC	20
Indeno[1,2,3-cd]pyrene	<0.050		<0.050		ug/L		NC	20
Isophorone	<0.50		<0.50		ug/L		NC	20
Lindane	<0.040		<0.040		ug/L		NC	20
Malathion	<0.099		<0.099		ug/L		NC	20
Methoxychlor	<0.099		<0.099		ug/L		NC	20
Metolachlor	<0.050		<0.050		ug/L		NC	20
Molinate	<0.099		<0.099		ug/L		NC	20
Naphthalene	<0.30		<0.30		ug/L		NC	20
Parathion	<0.099		<0.099		ug/L		NC	20
Pendimethalin (Penoxaline)	<0.099		<0.099		ug/L		NC	20
Phenanthrene	<0.040		<0.040		ug/L		NC	20
Propachlor	<0.050		<0.050		ug/L		NC	20
Pyrene	<0.050		<0.050		ug/L		NC	20
Simazine	<0.050		<0.050		ug/L		NC	20
Terbacil	<0.099		<0.099		ug/L		NC	20
Terbutylazine	<0.099		<0.099		ug/L		NC	20
Thiobencarb	<0.20		<0.20		ug/L		NC	20
Total Permethrin (mixed isomers)	<0.20		<0.20		ug/L		NC	20
trans-Nonachlor	<0.050		<0.050		ug/L		NC	20
Trifluralin	<0.099		<0.099		ug/L		NC	20

Surrogate	DU	DU	Limits
	%Recovery	Qualifier	
2-Nitro-m-xylene	98		70 - 130
Perylene-d12	91		70 - 130
Triphenylphosphate	98		70 - 130

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

Lab Sample ID: MBL 380-61792/21-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 61792

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1

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QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: MBL 380-61792/21-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 61792

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<0.25		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0	ng/L		10/31/23 11:52	11/02/23 11:37	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	92		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C6 PFDA	97		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C5 PFHxA	98		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C4 PFHpA	95		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C8 PFOA	100		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C9 PFNA	100		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C7 PFUnA	94		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C2 PFDoA	98		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C4 PFBA	95		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C5 PFPeA	104		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C3 PFBS	94		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C3 PFHxS	94		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C8 PFOS	97		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C2-4:2-FTS	99		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C2-6:2-FTS	98		50 - 200	10/31/23 11:52	11/02/23 11:37	1
13C2-8:2-FTS	111		50 - 200	10/31/23 11:52	11/02/23 11:37	1

Lab Sample ID: LCS 380-61792/23-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 61792

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11CI-PF3OUdS)	60.2	56.5		ng/L		94	70 - 130

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QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: LCS 380-61792/23-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 61792

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid(9Cl-PF3ONS)	60.2	60.0		ng/L		100	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.2	65.1		ng/L		108	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.2	60.7		ng/L		101	70 - 130
Perfluorobutanesulfonic acid (PFBS)	60.2	62.5		ng/L		104	70 - 130
Perfluorodecanoic acid (PFDA)	60.2	59.5		ng/L		99	70 - 130
Perfluorododecanoic acid (PFDoA)	60.2	68.7		ng/L		114	70 - 130
Perfluoroheptanoic acid (PFHpA)	60.2	62.7		ng/L		104	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	60.2	57.6		ng/L		96	70 - 130
Perfluorohexanoic acid (PFHxA)	60.2	55.6		ng/L		92	70 - 130
Perfluorononanoic acid (PFNA)	60.2	58.3		ng/L		97	70 - 130
Perfluorooctanesulfonic acid (PFOS)	60.2	60.0		ng/L		100	70 - 130
Perfluorooctanoic acid (PFOA)	60.2	60.9		ng/L		101	70 - 130
Perfluoroundecanoic acid (PFUnA)	60.2	65.4		ng/L		108	70 - 130
Perfluorobutanoic acid (PFBA)	60.2	66.6		ng/L		111	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.2	61.9		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.2	62.0		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.2	55.8		ng/L		93	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.2	57.9		ng/L		96	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	60.2	57.9		ng/L		96	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.2	62.6		ng/L		104	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.2	51.9		ng/L		86	70 - 130
Perfluoropentanoic acid (PFPeA)	60.2	58.7		ng/L		98	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.2	53.8		ng/L		89	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	60.2	58.8		ng/L		98	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	91		50 - 200
13C6 PFDA	99		50 - 200
13C5 PFHxA	100		50 - 200
13C4 PFHpA	96		50 - 200
13C8 PFOA	100		50 - 200
13C9 PFNA	99		50 - 200
13C7 PFUnA	98		50 - 200
13C2 PFDoA	96		50 - 200
13C4 PFBA	96		50 - 200

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: LCS 380-61792/23-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 61792

<i>Isotope Dilution</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
13C5 PFPeA	100		50 - 200
13C3 PFBS	92		50 - 200
13C3 PFHxS	96		50 - 200
13C8 PFOS	100		50 - 200
13C2-4:2-FTS	101		50 - 200
13C2-6:2-FTS	106		50 - 200
13C2-8:2-FTS	112		50 - 200

Lab Sample ID: LCSD 380-61792/24-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 61792

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	60.1	59.2		ng/L		98	70 - 130	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.1	60.5		ng/L		101	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.1	69.1		ng/L		115	70 - 130	6	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.1	52.0		ng/L		87	70 - 130	15	30
Perfluorobutanesulfonic acid (PFBS)	60.1	61.8		ng/L		103	70 - 130	1	30
Perfluorodecanoic acid (PFDA)	60.1	57.8		ng/L		96	70 - 130	3	30
Perfluorododecanoic acid (PFDoA)	60.1	68.4		ng/L		114	70 - 130	0	30
Perfluoroheptanoic acid (PFHpA)	60.1	64.1		ng/L		107	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	60.1	59.2		ng/L		98	70 - 130	3	30
Perfluorohexanoic acid (PFHxA)	60.1	60.0		ng/L		100	70 - 130	8	30
Perfluorononanoic acid (PFNA)	60.1	57.0		ng/L		95	70 - 130	2	30
Perfluorooctanesulfonic acid (PFOS)	60.1	63.0		ng/L		105	70 - 130	5	30
Perfluorooctanoic acid (PFOA)	60.1	63.4		ng/L		106	70 - 130	4	30
Perfluoroundecanoic acid (PFUnA)	60.1	65.2		ng/L		108	70 - 130	0	30
Perfluorobutanoic acid (PFBA)	60.1	65.0		ng/L		108	70 - 130	2	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.1	61.0		ng/L		101	70 - 130	2	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.1	62.6		ng/L		104	70 - 130	1	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.1	58.2		ng/L		97	70 - 130	4	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.1	53.8		ng/L		90	70 - 130	7	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	60.1	55.3		ng/L		92	70 - 130	5	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.1	65.4		ng/L		109	70 - 130	4	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.1	53.4		ng/L		89	70 - 130	3	30

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QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: LCSD 380-61792/24-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 61792

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)	60.1	60.1		ng/L		100	70 - 130	2	30
Perfluoroheptanesulfonic acid (PFHpS)	60.1	57.1		ng/L		95	70 - 130	6	30
Perfluoropentanesulfonic acid (PFPeS)	60.1	58.5		ng/L		97	70 - 130	0	30
		LCSD %Recovery	LCSD Qualifier			Limits			
<i>Isotope Dilution</i>									
13C3 HFPO-DA		94					50 - 200		
13C6 PFDA		97					50 - 200		
13C5 PFHxA		93					50 - 200		
13C4 PFHpA		93					50 - 200		
13C8 PFOA		94					50 - 200		
13C9 PFNA		99					50 - 200		
13C7 PFUnA		95					50 - 200		
13C2 PFDoA		95					50 - 200		
13C4 PFBA		93					50 - 200		
13C5 PFPeA		97					50 - 200		
13C3 PFBS		95					50 - 200		
13C3 PFHxS		95					50 - 200		
13C8 PFOS		96					50 - 200		
13C2-4:2-FTS		96					50 - 200		
13C2-6:2-FTS		98					50 - 200		
13C2-8:2-FTS		108					50 - 200		

Lab Sample ID: MRL 380-61792/22-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 61792

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	1.88	J	ng/L		94	50 - 150		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.06	J	ng/L		103	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.12	J	ng/L		106	50 - 150		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	1.87	J	ng/L		93	50 - 150		
Perfluorobutanesulfonic acid (PFBS)	2.00	2.08	J	ng/L		104	50 - 150		
Perfluorodecanoic acid (PFDA)	2.00	1.91	J	ng/L		96	50 - 150		
Perfluorododecanoic acid (PFDoA)	2.00	2.27	J	ng/L		114	50 - 150		
Perfluoroheptanoic acid (PFHpA)	2.00	2.09	J	ng/L		105	50 - 150		
Perfluorohexanesulfonic acid (PFHxS)	2.00	1.96	J	ng/L		98	50 - 150		
Perfluorohexanoic acid (PFHxA)	2.00	1.89	J	ng/L		94	50 - 150		
Perfluorononanoic acid (PFNA)	2.00	1.91	J	ng/L		95	50 - 150		
Perfluorooctanesulfonic acid (PFOS)	2.00	2.12	J	ng/L		106	50 - 150		
Perfluorooctanoic acid (PFOA)	2.00	2.15	J	ng/L		108	50 - 150		

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: MRL 380-61792/22-A
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 61792

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroundecanoic acid (PFUnA)	2.00	2.15	J	ng/L		107	50 - 150
Perfluorobutanoic acid (PFBA)	2.00	2.36	J	ng/L		118	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.08	J	ng/L		104	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.06	J	ng/L		103	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	1.84	J	ng/L		92	50 - 150
Nonafluoro-3,6-dioxiheptanoic acid (NFDHA)	2.00	1.97	J	ng/L		99	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	2.00	1.64	J	ng/L		82	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.12	J	ng/L		106	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	1.75	J	ng/L		88	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.08	J	ng/L		104	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	1.83	J	ng/L		92	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	1.78	J	ng/L		89	50 - 150

Isotope Dilution	MRL %Recovery	MRL Qualifier	Limits
13C3 HFPO-DA	96		50 - 200
13C6 PFDA	99		50 - 200
13C5 PFHxA	98		50 - 200
13C4 PFHpA	98		50 - 200
13C8 PFOA	100		50 - 200
13C9 PFNA	100		50 - 200
13C7 PFUnA	93		50 - 200
13C2 PFDoA	94		50 - 200
13C4 PFBA	95		50 - 200
13C5 PFPeA	103		50 - 200
13C3 PFBS	94		50 - 200
13C3 PFHxS	96		50 - 200
13C8 PFOS	95		50 - 200
13C2-4:2-FTS	102		50 - 200
13C2-6:2-FTS	105		50 - 200
13C2-8:2-FTS	111		50 - 200

Lab Sample ID: 380-68292-A-19-A MS
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 61792

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		60.1	60.9		ng/L		101	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.1	64.9		ng/L		108	70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: 380-68292-A-19-A MS
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 61792

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.1	75.5		ng/L		126	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		60.1	49.4		ng/L		82	70 - 130
Perfluorobutanesulfonic acid (PFBS)	6.3		60.1	70.4		ng/L		107	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		60.1	61.9		ng/L		103	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		60.1	73.1		ng/L		122	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		60.1	69.5		ng/L		113	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		60.1	65.7		ng/L		108	70 - 130
Perfluorohexanoic acid (PFHxA)	16		60.1	87.0		ng/L		118	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		60.1	64.4		ng/L		107	70 - 130
Perfluorooctanesulfonic acid (PFOS)	2.3		60.1	67.9		ng/L		109	70 - 130
Perfluorooctanoic acid (PFOA)	6.8		60.1	73.6		ng/L		111	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		60.1	71.8		ng/L		119	70 - 130
Perfluorobutanoic acid (PFBA)	4.4		60.1	71.7		ng/L		112	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.1	65.5		ng/L		109	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.1	65.8		ng/L		109	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.1	59.2		ng/L		98	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.1	65.0		ng/L		108	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	<2.0		60.1	62.6		ng/L		104	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0	F1	60.1	91.8	F1	ng/L		153	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.1	64.4		ng/L		107	70 - 130
Perfluoropentanoic acid (PFPeA)	17		60.1	74.1		ng/L		94	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.1	59.8		ng/L		100	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.1	64.2		ng/L		107	70 - 130

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C3 HFPO-DA	108		50 - 200
13C6 PFDA	94		50 - 200
13C5 PFHxA	76		50 - 200
13C4 PFHpA	78		50 - 200
13C8 PFOA	89		50 - 200
13C9 PFNA	94		50 - 200
13C7 PFUnA	91		50 - 200
13C2 PFDoA	95		50 - 200
13C4 PFBA	81		50 - 200
13C5 PFPeA	125		50 - 200
13C3 PFBS	90		50 - 200
13C3 PFHxS	92		50 - 200

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: 380-68292-A-19-A MS
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 61792

Isotope Dilution	MS MS		Limits
	%Recovery	Qualifier	
13C8 PFOS	94		50 - 200
13C2-4:2-FTS	124		50 - 200
13C2-6:2-FTS	146		50 - 200
13C2-8:2-FTS	155		50 - 200

Lab Sample ID: 380-68292-B-19-A MSD
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 61792

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec	RPD	RPD Limit
									Limits		
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.4	59.0		ng/L		98	70 - 130	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<2.0		60.4	61.0		ng/L		101	70 - 130	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.4	72.1		ng/L		119	70 - 130	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		60.4	49.4		ng/L		82	70 - 130	0	30
Perfluorobutanesulfonic acid (PFBS)	6.3		60.4	65.6		ng/L		98	70 - 130	7	30
Perfluorodecanoic acid (PFDA)	<2.0		60.4	59.5		ng/L		99	70 - 130	4	30
Perfluorododecanoic acid (PFDoA)	<2.0		60.4	70.7		ng/L		117	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	<2.0		60.4	67.5		ng/L		109	70 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		60.4	62.5		ng/L		102	70 - 130	5	30
Perfluorohexanoic acid (PFHxA)	16		60.4	84.6		ng/L		114	70 - 130	3	30
Perfluorononanoic acid (PFNA)	<2.0		60.4	60.1		ng/L		100	70 - 130	7	30
Perfluorooctanesulfonic acid (PFOS)	2.3		60.4	65.1		ng/L		104	70 - 130	4	30
Perfluorooctanoic acid (PFOA)	6.8		60.4	73.0		ng/L		110	70 - 130	1	30
Perfluoroundecanoic acid (PFUnA)	<2.0		60.4	69.5		ng/L		115	70 - 130	3	30
Perfluorobutanoic acid (PFBA)	4.4		60.4	68.8		ng/L		107	70 - 130	4	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.4	59.1		ng/L		98	70 - 130	10	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.4	65.7		ng/L		109	70 - 130	0	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.4	52.9		ng/L		88	70 - 130	11	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.4	62.4		ng/L		103	70 - 130	4	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.4	56.5		ng/L		94	70 - 130	10	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0	F1	60.4	89.8	F1	ng/L		149	70 - 130	2	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.4	64.8		ng/L		107	70 - 130	1	30
Perfluoropentanoic acid (PFPeA)	17		60.4	74.5		ng/L		95	70 - 130	1	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.4	55.3		ng/L		92	70 - 130	8	30

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: 380-68292-B-19-A MSD
Matrix: Water
Analysis Batch: 62140

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 61792

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.4	59.7		ng/L		99	70 - 130	7	30
MSD MSD											
Isotope Dilution	%Recovery	Qualifier	Limits								
13C3 HFPO-DA	118		50 - 200								
13C6 PFDA	101		50 - 200								
13C5 PFHxA	85		50 - 200								
13C4 PFHpA	87		50 - 200								
13C8 PFOA	97		50 - 200								
13C9 PFNA	102		50 - 200								
13C7 PFUnA	98		50 - 200								
13C2 PFDoA	101		50 - 200								
13C4 PFBA	89		50 - 200								
13C5 PFPeA	136		50 - 200								
13C3 PFBS	97		50 - 200								
13C3 PFHxS	101		50 - 200								
13C8 PFOS	101		50 - 200								
13C2-4:2-FTS	124		50 - 200								
13C2-6:2-FTS	146		50 - 200								
13C2-8:2-FTS	166		50 - 200								

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

Lab Sample ID: MBL 380-59769/23-A
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 59769

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		10/17/23 05:05	10/20/23 06:43	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	<0.58		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	<0.42		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1

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QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: MBL 380-59769/23-A
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 59769

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		10/17/23 05:05	10/20/23 06:43	1

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	125		70 - 130	10/17/23 05:05	10/20/23 06:43	1
13C2 PFHxA	122		70 - 130	10/17/23 05:05	10/20/23 06:43	1
13C2 PFDA	120		70 - 130	10/17/23 05:05	10/20/23 06:43	1
13C3-GenX	108		70 - 130	10/17/23 05:05	10/20/23 06:43	1

Lab Sample ID: LCS 380-59769/25-A
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59769

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	50.1	47.9		ng/L		96	70 - 130
Perfluorooctanesulfonic acid (PFOS)	46.4	46.1		ng/L		99	70 - 130
Perfluoroundecanoic acid (PFUnA)	50.1	47.7		ng/L		95	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	50.1	48.7		ng/L		97	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	50.1	47.4		ng/L		95	70 - 130
Perfluorohexanoic acid (PFHxA)	50.1	48.8		ng/L		97	70 - 130
Perfluorododecanoic acid (PFDoA)	50.1	49.2		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	50.1	49.6		ng/L		99	70 - 130
Perfluorodecanoic acid (PFDA)	50.1	49.6		ng/L		99	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	45.7	47.6		ng/L		104	70 - 130
Perfluorobutanesulfonic acid (PFBS)	44.3	42.4		ng/L		96	70 - 130
Perfluoroheptanoic acid (PFHpA)	50.1	47.7		ng/L		95	70 - 130
Perfluorononanoic acid (PFNA)	50.1	51.5		ng/L		103	70 - 130
Perfluorotetradecanoic acid (PFTA)	50.1	49.5		ng/L		99	70 - 130
Perfluorotridecanoic acid (PFTTrDA)	50.1	49.9		ng/L		100	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	46.8	47.1		ng/L		100	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	47.3	46.9		ng/L		99	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	47.3	45.6		ng/L		96	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
d5-NEtFOSAA	103		70 - 130
13C2 PFHxA	123		70 - 130
13C2 PFDA	112		70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: LCS 380-59769/25-A
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59769

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
13C3-GenX	107		70 - 130

Lab Sample ID: LCSD 380-59769/26-A
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 59769

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	50.2	47.0		ng/L		94	70 - 130	2	30	
Perfluorooctanesulfonic acid (PFOS)	46.5	46.7		ng/L		100	70 - 130	1	30	
Perfluoroundecanoic acid (PFUnA)	50.2	49.1		ng/L		98	70 - 130	3	30	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	50.2	49.3		ng/L		98	70 - 130	1	30	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	50.2	50.1		ng/L		100	70 - 130	6	30	
Perfluorohexanoic acid (PFHxA)	50.2	40.2		ng/L		80	70 - 130	19	30	
Perfluorododecanoic acid (PFDoA)	50.2	50.1		ng/L		100	70 - 130	2	30	
Perfluorooctanoic acid (PFOA)	50.2	50.9		ng/L		101	70 - 130	2	30	
Perfluorodecanoic acid (PFDA)	50.2	50.7		ng/L		101	70 - 130	2	30	
Perfluorohexanesulfonic acid (PFHxS)	45.8	48.7		ng/L		106	70 - 130	2	30	
Perfluorobutanesulfonic acid (PFBS)	44.4	38.7		ng/L		87	70 - 130	9	30	
Perfluoroheptanoic acid (PFHpA)	50.2	49.7		ng/L		99	70 - 130	4	30	
Perfluorononanoic acid (PFNA)	50.2	52.0		ng/L		104	70 - 130	1	30	
Perfluorotetradecanoic acid (PFTA)	50.2	47.7		ng/L		95	70 - 130	4	30	
Perfluorotridecanoic acid (PFTrDA)	50.2	50.1		ng/L		100	70 - 130	0	30	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	46.9	47.0		ng/L		100	70 - 130	0	30	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	47.4	46.5		ng/L		98	70 - 130	1	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	47.4	47.4		ng/L		100	70 - 130	4	30	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
d5-NEtFOSAA	104		70 - 130
13C2 PFHxA	109		70 - 130
13C2 PFDA	112		70 - 130
13C3-GenX	104		70 - 130

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: MRL 380-59769/24-A
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59769

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	1.86	J	ng/L		93	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	2.11	J	ng/L		113	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.02	J	ng/L		101	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.41	J	ng/L		120	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.71	J	ng/L		135	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.14	J	ng/L		107	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.04	J	ng/L		102	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.11	J	ng/L		105	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.12	J	ng/L		106	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	2.08	J	ng/L		114	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.77	1.78	J	ng/L		100	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.04	J	ng/L		102	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.21	J	ng/L		110	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	2.04	J	ng/L		102	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	2.11	J	ng/L		105	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.87	2.07	J	ng/L		110	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.89	2.04	J	ng/L		108	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.98	J	ng/L		104	50 - 150

Surrogate	MRL %Recovery	MRL Qualifier	MRL Limits
d5-NEtFOSAA	113		70 - 130
13C2 PFHxA	111		70 - 130
13C2 PFDA	116		70 - 130
13C3-GenX	101		70 - 130

Lab Sample ID: 380-66500-B-1-A MS
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 59769

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		50.2	52.1		ng/L		104	70 - 130
Perfluorooctanesulfonic acid (PFOS)	26	F1	46.5	104	E F1	ng/L		168	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		50.2	49.4		ng/L		98	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.2	47.8		ng/L		95	70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: 380-66500-B-1-A MS
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 59769

Analyte	Sample Result	Sample Qualifier	Spike Added	MS		Unit	D	%Rec	%Rec Limits	
				Result	Qualifier				Limit	Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.2	46.5		ng/L		93	70 - 130	
Perfluorohexanoic acid (PFHxA)	13	F1	50.2	79.8	F1	ng/L		134	70 - 130	
Perfluorododecanoic acid (PFDoA)	<2.0		50.2	52.2		ng/L		104	70 - 130	
Perfluorooctanoic acid (PFOA)	12	F1	50.2	95.8	E F1	ng/L		167	70 - 130	
Perfluorodecanoic acid (PFDA)	<2.0		50.2	53.9		ng/L		106	70 - 130	
Perfluorohexanesulfonic acid (PFHxS)	15	F1	45.8	130	E F1	ng/L		250	70 - 130	
Perfluorobutanesulfonic acid (PFBS)	10	F1	44.4	74.1	E F1	ng/L		143	70 - 130	
Perfluoroheptanoic acid (PFHpA)	5.8		50.2	57.9		ng/L		104	70 - 130	
Perfluorononanoic acid (PFNA)	<2.0		50.2	55.1		ng/L		107	70 - 130	
Perfluorotetradecanoic acid (PFTA)	<2.0		50.2	53.5		ng/L		107	70 - 130	
Perfluorotridecanoic acid (PFTrDA)	<2.0		50.2	51.7		ng/L		103	70 - 130	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		46.9	47.1		ng/L		100	70 - 130	
11-Chloroeicosasfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		47.4	45.9		ng/L		97	70 - 130	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		47.4	49.4		ng/L		104	70 - 130	
MS MS										
Surrogate	%Recovery	Qualifier	Limits							
d5-NEtFOSAA	55	S1-	70 - 130							
13C2 PFHxA	125		70 - 130							
13C2 PFDA	113		70 - 130							
13C3-GenX	116		70 - 130							

Lab Sample ID: 380-66500-C-1-A MSD
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 59769

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD		Unit	D	%Rec	%Rec		RPD	
				Result	Qualifier				Limit	Limit	RPD	Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		50.1	49.3		ng/L		98	70 - 130	6	30	
Perfluorooctanesulfonic acid (PFOS)	26	F1	46.4	108	E F1	ng/L		176	70 - 130	4	30	
Perfluoroundecanoic acid (PFUnA)	<2.0		50.1	49.9		ng/L		100	70 - 130	1	30	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.1	49.7		ng/L		99	70 - 130	4	30	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.1	49.1		ng/L		98	70 - 130	5	30	
Perfluorohexanoic acid (PFHxA)	13	F1	50.1	79.5	F1	ng/L		133	70 - 130	0	30	
Perfluorododecanoic acid (PFDoA)	<2.0		50.1	52.3		ng/L		104	70 - 130	0	30	
Perfluorooctanoic acid (PFOA)	12	F1	50.1	93.6	E F1	ng/L		163	70 - 130	2	30	
Perfluorodecanoic acid (PFDA)	<2.0		50.1	53.3		ng/L		105	70 - 130	1	30	

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QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: 380-66500-C-1-A MSD
Matrix: Water
Analysis Batch: 60248

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 59769

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanesulfonic acid (PFHxS)	15	F1	45.7	129	E F1	ng/L		249	70 - 130	0	30
Perfluorobutanesulfonic acid (PFBS)	10	F1	44.3	77.2	E F1	ng/L		151	70 - 130	4	30
Perfluoroheptanoic acid (PFHpA)	5.8		50.1	57.8		ng/L		104	70 - 130	0	30
Perfluorononanoic acid (PFNA)	<2.0		50.1	54.6		ng/L		106	70 - 130	1	30
Perfluorotetradecanoic acid (PFTA)	<2.0		50.1	51.9		ng/L		104	70 - 130	3	30
Perfluorotridecanoic acid (PFTrDA)	<2.0		50.1	51.7		ng/L		103	70 - 130	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		46.8	47.2		ng/L		101	70 - 130	0	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		47.3	45.6		ng/L		96	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		47.3	48.7		ng/L		103	70 - 130	1	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
d5-NEtFOSAA	102		70 - 130
13C2 PFHxA	120		70 - 130
13C2 PFDA	112		70 - 130
13C3-GenX	110		70 - 130

Lab Sample ID: MBL 380-59976/23-A
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 59976

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		10/18/23 08:22	10/21/23 04:36	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1

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QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: MBL 380-59976/23-A
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 59976

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		10/18/23 08:22	10/21/23 04:36	1

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	89		70 - 130	10/18/23 08:22	10/21/23 04:36	1
13C2 PFHxA	107		70 - 130	10/18/23 08:22	10/21/23 04:36	1
13C2 PFDA	98		70 - 130	10/18/23 08:22	10/21/23 04:36	1
13C3-GenX	92		70 - 130	10/18/23 08:22	10/21/23 04:36	1

Lab Sample ID: LCS 380-59976/25-A
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59976

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	27.0		ng/L		108	70 - 130
Perfluorooctanesulfonic acid (PFOS)	23.2	25.6		ng/L		110	70 - 130
Perfluoroundecanoic acid (PFUnA)	25.1	26.2		ng/L		105	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	25.2		ng/L		100	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	24.6		ng/L		98	70 - 130
Perfluorohexanoic acid (PFHxA)	25.1	27.5		ng/L		110	70 - 130
Perfluorododecanoic acid (PFDoA)	25.1	24.9		ng/L		99	70 - 130
Perfluorooctanoic acid (PFOA)	25.1	27.7		ng/L		110	70 - 130
Perfluorodecanoic acid (PFDA)	25.1	27.3		ng/L		109	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	22.9	25.7		ng/L		112	70 - 130
Perfluorobutanesulfonic acid (PFBS)	22.2	23.7		ng/L		107	70 - 130
Perfluoroheptanoic acid (PFHpA)	25.1	26.4		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	25.1	28.0		ng/L		112	70 - 130
Perfluorotetradecanoic acid (PFTA)	25.1	25.9		ng/L		103	70 - 130
Perfluorotridecanoic acid (PFTTrDA)	25.1	24.7		ng/L		99	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	23.5	25.4		ng/L		108	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	23.7	24.0		ng/L		101	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	23.7	24.6		ng/L		104	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
d5-NEtFOSAA	97		70 - 130
13C2 PFHxA	110		70 - 130
13C2 PFDA	109		70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: LCS 380-59976/25-A
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59976

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
13C3-GenX	102		70 - 130

Lab Sample ID: LCSD 380-59976/26-A
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 59976

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	22.8		ng/L		91	70 - 130	17	30	
Perfluorooctanesulfonic acid (PFOS)	23.2	25.1		ng/L		108	70 - 130	2	30	
Perfluoroundecanoic acid (PFUnA)	25.1	25.6		ng/L		102	70 - 130	2	30	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	24.3		ng/L		97	70 - 130	4	30	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	24.1		ng/L		96	70 - 130	2	30	
Perfluorohexanoic acid (PFHxA)	25.1	25.1		ng/L		100	70 - 130	9	30	
Perfluorododecanoic acid (PFDoA)	25.1	23.9		ng/L		95	70 - 130	4	30	
Perfluorooctanoic acid (PFOA)	25.1	26.5		ng/L		106	70 - 130	4	30	
Perfluorodecanoic acid (PFDA)	25.1	25.8		ng/L		103	70 - 130	6	30	
Perfluorohexanesulfonic acid (PFHxS)	22.9	25.1		ng/L		110	70 - 130	2	30	
Perfluorobutanesulfonic acid (PFBS)	22.2	23.9		ng/L		108	70 - 130	1	30	
Perfluoroheptanoic acid (PFHpA)	25.1	24.2		ng/L		97	70 - 130	9	30	
Perfluorononanoic acid (PFNA)	25.1	26.1		ng/L		104	70 - 130	7	30	
Perfluorotetradecanoic acid (PFTA)	25.1	24.2		ng/L		97	70 - 130	7	30	
Perfluorotridecanoic acid (PFTrDA)	25.1	23.6		ng/L		94	70 - 130	5	30	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	23.4	24.3		ng/L		104	70 - 130	4	30	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	23.7	23.7		ng/L		100	70 - 130	1	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	23.7	22.7		ng/L		96	70 - 130	8	30	

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
d5-NEtFOSAA	96		70 - 130
13C2 PFHxA	101		70 - 130
13C2 PFDA	101		70 - 130
13C3-GenX	94		70 - 130

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: MRL 380-59976/24-A
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 59976

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	1.59	J	ng/L		80	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.85	1.99	J	ng/L		108	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	1.83	J	ng/L		91	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	1.79	J	ng/L		89	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	1.69	J	ng/L		84	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	1.79	J	ng/L		89	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	1.77	J	ng/L		88	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	1.93	J	ng/L		96	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	1.89	J	ng/L		95	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	1.88	J	ng/L		103	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.77	1.66	J	ng/L		94	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	1.83	J	ng/L		91	50 - 150
Perfluorononanoic acid (PFNA)	2.00	1.89	J	ng/L		95	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	1.89	J	ng/L		94	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	1.75	J	ng/L		88	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	1.87	1.85	J	ng/L		99	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.89	1.80	J	ng/L		95	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.66	J	ng/L		88	50 - 150

Surrogate	MRL %Recovery	MRL Qualifier	MRL Limits
d5-NEtFOSAA	88		70 - 130
13C2 PFHxA	96		70 - 130
13C2 PFDA	98		70 - 130
13C3-GenX	85		70 - 130

Lab Sample ID: 380-66846-L-1-A MSD
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 59976

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	12	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		23.2	24.9		ng/L		107	70 - 130	4	30
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	26.7		ng/L		106	70 - 130	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	24.6		ng/L		98	70 - 130	4	30

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QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: 380-66846-L-1-A MSD
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 59976

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	<2.0		25.1	24.3		ng/L		97	70 - 130	9	30
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	26.9		ng/L		105	70 - 130	5	30
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	25.0		ng/L		100	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	<2.0		25.1	26.5		ng/L		103	70 - 130	8	30
Perfluorodecanoic acid (PFDA)	<2.0		25.1	27.2		ng/L		108	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		22.9	24.9		ng/L		105	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		22.2	23.4		ng/L		104	70 - 130	3	30
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	26.7		ng/L		106	70 - 130	8	30
Perfluorononanoic acid (PFNA)	<2.0		25.1	27.7		ng/L		110	70 - 130	4	30
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	23.2		ng/L		92	70 - 130	4	30
Perfluorotridecanoic acid (PFTTrDA)	<2.0		25.1	25.1		ng/L		100	70 - 130	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		23.5	25.7		ng/L		109	70 - 130	2	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		23.7	24.0		ng/L		101	70 - 130	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		23.7	25.4		ng/L		107	70 - 130	16	30
Surrogate											
		MSD %Recovery	MSD Qualifier	Limits							
d5-NEtFOSAA		98		70 - 130							
13C2 PFHxA		115		70 - 130							
13C2 PFDA		109		70 - 130							
13C3-GenX		103		70 - 130							

Lab Sample ID: 380-66846-M-1-A MS
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 59976

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		25.1	23.8		ng/L		95	70 - 130		
Perfluorooctanesulfonic acid (PFOS)	<2.0		23.2	25.8		ng/L		111	70 - 130		
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	26.1		ng/L		104	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	23.8		ng/L		95	70 - 130		
N-ethylperfluorooctanesulfonamidoacetic acid (NETFOSAA)	<2.0		25.1	22.3		ng/L		89	70 - 130		
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	25.6		ng/L		100	70 - 130		
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	25.3		ng/L		101	70 - 130		
Perfluorooctanoic acid (PFOA)	<2.0		25.1	24.5		ng/L		96	70 - 130		
Perfluorodecanoic acid (PFDA)	<2.0		25.1	26.0		ng/L		104	70 - 130		

Eurofins Eaton Analytical Pomona

QC Sample Results

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

Job ID: 380-67025-1

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

Lab Sample ID: 380-66846-M-1-A MS
Matrix: Water
Analysis Batch: 60298

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 59976

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	<2.0		22.9	25.8		ng/L		110	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		22.2	24.1		ng/L		107	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	24.7		ng/L		98	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		25.1	26.6		ng/L		106	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	24.1		ng/L		96	70 - 130
Perfluorotridecanoic acid (PFTTrDA)	<2.0		25.1	25.0		ng/L		99	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<2.0		23.5	26.2		ng/L		111	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		23.7	24.8		ng/L		105	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		23.7	21.6		ng/L		91	70 - 130
Surrogate		MS		MS					
	%Recovery	Qualifier	Limits						
d5-NEtFOSAA	88		70 - 130						
13C2 PFHxA	101		70 - 130						
13C2 PFDA	104		70 - 130						
13C3-GenX	94		70 - 130						

QC Association Summary

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

Job ID: 380-67025-1

GC/MS Semi VOA

Prep Batch: 59599

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-67025-1	HALAWA WELLS PUMP 1	Total/NA	Drinking Water	525.2	
MB 380-59599/21-A	Method Blank	Total/NA	Water	525.2	
LCS 380-59599/23-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 380-59599/24-A	Lab Control Sample Dup	Total/NA	Water	525.2	
MRL 380-59599/22-A	Lab Control Sample	Total/NA	Water	525.2	
380-66624-Z-1-A MS	Matrix Spike	Total/NA	Water	525.2	
380-66633-Z-1-A DU	Duplicate	Total/NA	Water	525.2	

Analysis Batch: 59963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-67025-1	HALAWA WELLS PUMP 1	Total/NA	Drinking Water	525.2	59599
MB 380-59599/21-A	Method Blank	Total/NA	Water	525.2	59599
LCS 380-59599/23-A	Lab Control Sample	Total/NA	Water	525.2	59599
LCSD 380-59599/24-A	Lab Control Sample Dup	Total/NA	Water	525.2	59599
MRL 380-59599/22-A	Lab Control Sample	Total/NA	Water	525.2	59599
380-66624-Z-1-A MS	Matrix Spike	Total/NA	Water	525.2	59599
380-66633-Z-1-A DU	Duplicate	Total/NA	Water	525.2	59599

LCMS

Prep Batch: 59769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-67025-3	FB: HALAWA WELLS PUMP 1	Total/NA	Water	537.1 DW	
MBL 380-59769/23-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-59769/25-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 380-59769/26-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	
MRL 380-59769/24-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-66500-B-1-A MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-66500-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	

Prep Batch: 59976

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-67025-1	HALAWA WELLS PUMP 1	Total/NA	Drinking Water	537.1 DW	
MBL 380-59976/23-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-59976/25-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 380-59976/26-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	
MRL 380-59976/24-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-66846-L-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	
380-66846-M-1-A MS	Matrix Spike	Total/NA	Water	537.1 DW	

Analysis Batch: 60248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-67025-3	FB: HALAWA WELLS PUMP 1	Total/NA	Water	537.1	59769
MBL 380-59769/23-A	Method Blank	Total/NA	Water	537.1	59769
LCS 380-59769/25-A	Lab Control Sample	Total/NA	Water	537.1	59769
LCSD 380-59769/26-A	Lab Control Sample Dup	Total/NA	Water	537.1	59769
MRL 380-59769/24-A	Lab Control Sample	Total/NA	Water	537.1	59769
380-66500-B-1-A MS	Matrix Spike	Total/NA	Water	537.1	59769
380-66500-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	59769

QC Association Summary

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

Job ID: 380-67025-1

LCMS

Analysis Batch: 60298

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-67025-1	HALAWA WELLS PUMP 1	Total/NA	Drinking Water	537.1	59976
MBL 380-59976/23-A	Method Blank	Total/NA	Water	537.1	59976
LCS 380-59976/25-A	Lab Control Sample	Total/NA	Water	537.1	59976
LCSD 380-59976/26-A	Lab Control Sample Dup	Total/NA	Water	537.1	59976
MRL 380-59976/24-A	Lab Control Sample	Total/NA	Water	537.1	59976
380-66846-L-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	59976
380-66846-M-1-A MS	Matrix Spike	Total/NA	Water	537.1	59976

Prep Batch: 61792

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-67025-1	HALAWA WELLS PUMP 1	Total/NA	Drinking Water	533	
380-67025-3	FB: HALAWA WELLS PUMP 1	Total/NA	Water	533	
MBL 380-61792/21-A	Method Blank	Total/NA	Water	533	
LCS 380-61792/23-A	Lab Control Sample	Total/NA	Water	533	
LCSD 380-61792/24-A	Lab Control Sample Dup	Total/NA	Water	533	
MRL 380-61792/22-A	Lab Control Sample	Total/NA	Water	533	
380-68292-A-19-A MS	Matrix Spike	Total/NA	Water	533	
380-68292-B-19-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	

Analysis Batch: 62140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-67025-1	HALAWA WELLS PUMP 1	Total/NA	Drinking Water	533	61792
380-67025-3	FB: HALAWA WELLS PUMP 1	Total/NA	Water	533	61792
MBL 380-61792/21-A	Method Blank	Total/NA	Water	533	61792
LCS 380-61792/23-A	Lab Control Sample	Total/NA	Water	533	61792
LCSD 380-61792/24-A	Lab Control Sample Dup	Total/NA	Water	533	61792
MRL 380-61792/22-A	Lab Control Sample	Total/NA	Water	533	61792
380-68292-A-19-A MS	Matrix Spike	Total/NA	Water	533	61792
380-68292-B-19-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	61792

Lab Chronicle

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

Job ID: 380-67025-1

Client Sample ID: HALAWA WELLS PUMP 1

Date Collected: 10/12/23 11:00

Date Received: 10/13/23 09:45

Lab Sample ID: 380-67025-1

Matrix: Drinking Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	525.2			59599	OTM3	EA POM	10/16/23 12:00
Total/NA	Analysis	525.2		1	59963	Q8LA	EA POM	10/18/23 15:26
Total/NA	Prep	533			61792	T2EP	EA POM	10/31/23 11:52
Total/NA	Analysis	533		1	62140	SZ9R	EA POM	11/02/23 13:22
Total/NA	Prep	537.1 DW			59976	U7RS	EA POM	10/18/23 08:22
Total/NA	Analysis	537.1		1	60298	R6YA	EA POM	10/21/23 08:53

Client Sample ID: FB: HALAWA WELLS PUMP 1

Date Collected: 10/12/23 11:00

Date Received: 10/13/23 09:45

Lab Sample ID: 380-67025-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			61792	T2EP	EA POM	10/31/23 11:52
Total/NA	Analysis	533		1	62140	SZ9R	EA POM	11/02/23 13:32
Total/NA	Prep	537.1 DW			59769	U7RS	EA POM	10/17/23 05:05
Total/NA	Analysis	537.1		1	60248	UKDT	EA POM	10/20/23 10:40

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: 380-67025-1

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
525.2	525.2	Drinking Water	1-Methylnaphthalene
525.2	525.2	Drinking Water	2,4'-DDD
525.2	525.2	Drinking Water	2,4'-DDE
525.2	525.2	Drinking Water	2,4'-DDT
525.2	525.2	Drinking Water	2,4-Dinitrotoluene
525.2	525.2	Drinking Water	2,6-Dinitrotoluene
525.2	525.2	Drinking Water	2-Methylnaphthalene
525.2	525.2	Drinking Water	4,4'-DDD
525.2	525.2	Drinking Water	4,4'-DDE
525.2	525.2	Drinking Water	4,4'-DDT
525.2	525.2	Drinking Water	Acenaphthene
525.2	525.2	Drinking Water	Acenaphthylene
525.2	525.2	Drinking Water	Acetochlor
525.2	525.2	Drinking Water	alpha-BHC
525.2	525.2	Drinking Water	alpha-Chlordane
525.2	525.2	Drinking Water	Anthracene
525.2	525.2	Drinking Water	Benz(a)anthracene
525.2	525.2	Drinking Water	Benzo[b]fluoranthene
525.2	525.2	Drinking Water	Benzo[g,h,]perylene
525.2	525.2	Drinking Water	Benzo[k]fluoranthene
525.2	525.2	Drinking Water	beta-BHC
525.2	525.2	Drinking Water	Bromacil
525.2	525.2	Drinking Water	Butylbenzylphthalate
525.2	525.2	Drinking Water	Chlorobenzilate
525.2	525.2	Drinking Water	Chloroneb
525.2	525.2	Drinking Water	Chlorothalonil (Draconil, Bravo)
525.2	525.2	Drinking Water	Chlorpyrifos
525.2	525.2	Drinking Water	Chrysene
525.2	525.2	Drinking Water	delta-BHC
525.2	525.2	Drinking Water	Dibenz(a,h)anthracene
525.2	525.2	Drinking Water	Diclorvos (DDVP)
525.2	525.2	Drinking Water	Diethylphthalate
525.2	525.2	Drinking Water	Dimethylphthalate
525.2	525.2	Drinking Water	Di-n-butyl phthalate
525.2	525.2	Drinking Water	Di-n-octyl phthalate
525.2	525.2	Drinking Water	Endosulfan I (Alpha)
525.2	525.2	Drinking Water	Endosulfan II (Beta)
525.2	525.2	Drinking Water	Endosulfan sulfate
525.2	525.2	Drinking Water	Endrin aldehyde
525.2	525.2	Drinking Water	EPTC
525.2	525.2	Drinking Water	Fluoranthene
525.2	525.2	Drinking Water	Fluorene
525.2	525.2	Drinking Water	gamma-Chlordane
525.2	525.2	Drinking Water	Indeno[1,2,3-cd]pyrene
525.2	525.2	Drinking Water	Isophorone

Accreditation/Certification Summary

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

Job ID: 380-67025-1

Laboratory: Eurofins Eaton Analytical Pomona (Continued)

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

Authority	Program	Identification Number	Expiration Date
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
525.2	525.2	Drinking Water	Malathion
525.2	525.2	Drinking Water	Molinate
525.2	525.2	Drinking Water	Naphthalene
525.2	525.2	Drinking Water	Parathion
525.2	525.2	Drinking Water	Pendimethalin (Penoxaline)
525.2	525.2	Drinking Water	Phenanthrene
525.2	525.2	Drinking Water	Pyrene
525.2	525.2	Drinking Water	Terbacil
525.2	525.2	Drinking Water	Terbutylazine
525.2	525.2	Drinking Water	Thiobencarb
525.2	525.2	Drinking Water	Total Permethrin (mixed isomers)
525.2	525.2	Drinking Water	trans-Nonachlor
525.2	525.2	Drinking Water	Trifluralin
533	533	Drinking Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Drinking Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
533	533	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
533	533	Drinking Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
533	533	Drinking Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)
533	533	Drinking Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
533	533	Drinking Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
533	533	Drinking Water	Perfluorobutanoic acid (PFBA)
533	533	Drinking Water	Perfluoroheptanesulfonic acid (PFHpS)
533	533	Drinking Water	Perfluoropentanesulfonic acid (PFPeS)
533	533	Drinking Water	Perfluoropentanoic acid (PFPeA)
533	533	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
533	533	Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)

Accreditation/Certification Summary

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

Job ID: 380-67025-1

Laboratory: Eurofins Eaton Analytical Pomona (Continued)

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

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

Analysis Method	Prep Method	Matrix	Analyte
533	533	Water	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	Drinking Water	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537.1	537.1 DW	Drinking Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537.1	537.1 DW	Drinking Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
537.1	537.1 DW	Drinking Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537.1	537.1 DW	Water	11-Chloroeicosafuoro-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: 380-67025-1

Method	Method Description	Protocol	Laboratory
525.2	Semivolatile Organic Compounds (GC/MS)	EPA	EA POM
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA POM
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA POM
525.2	Extraction of Semivolatile Compounds	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: 380-67025-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
380-67025-1	HALAWA WELLS PUMP 1	Drinking Water	10/12/23 11:00	10/13/23 09:45	HI0000331
380-67025-3	FB: HALAWA WELLS PUMP 1	Water	10/12/23 11:00	10/13/23 09:45	HI0000331

- 1
- 2
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- 15
- 16
- 17

Monrovia, CA (Suite 100)

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

Chain of Custody Record



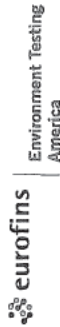
Client Information		Sampler: <i>Dawn Greer</i>	Lab PM: Arada, Rachelle	Carrier Tracking No(s):	COC No:
Client Contact: Dr. Ron Fenstermacher		Phone: 806-748-5840	E-Mail: Rachelle.Arada@eurofins.com	State of Origin: HI	Page: Page 1 of 1
Company: City and County of Honolulu		Due Date Requested:	Analysis Requested		Job #:
Address: 630 South Beretania St. Chemistry Lab		TAT Requested (days): Standard	SUBCONTRACT - 825 PAH Plus LL (EAL) + TICs		Preservation Codes:
City: Honolulu		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No	SUBCONTRACT - 8015 Diesel LL (EAL) and Motor Oil		M - Hexane
State, Zip: Hawaii 96843		Project #: 38001111	525.2_PREC - (MOD) 525 plus Plus TICs		N - None
Phone: 806-748-5841		SSOW#:	SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL)		O - AsHAcO2
Email: RFEENSTEMACHER@hbws.org		Project #:	Total Number of containers		P - Na2SO4S
Project Name: RED HILL/HBWS Sites Event Desc RUSH Weekly Red Hill		SSOW#:	Special Instructions/Note:		Q - Na2SO3
Site: Hawaii			<ul style="list-style-type: none"> A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Acetone H - Acetic Acid I - Ice J - DI Water K - EDTA L - EDA Other: 		R - Na2S2O3
Sample Identification		Sample Date	Sample Time	Sample Type (G=grab, O=comp, A=fill)	S - H2SO4
AIEA GULCH WELLS PUMP 1					T - TSP Dodecalhydrate
AIEA GULCH WELLS PUMP 2					U - Acetone
AIEA WELLS PUMP 1					V - MCAA
AIEA WELLS PUMP 2					W - PH 4-5
HALAWA WELLS PUMP 1		10/12/23	11:00	G	Y - Trizma
HALAWA WELLS PUMP 2					Z - other (specify)
MCANALUA WELLS					
TB AIEA GULCH WELLS PUMP 1					
TB AIEA GULCH WELLS PUMP 2					
TB AIEA WELLS PUMP (pump number)					
TB HALAWA WELLS PUMP (pump number)		10/12/23	1:00	G	
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)			
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	Received by:
Relinquished by:		10/12/23	13:4	FEDEX 7733277908918	<i>[Signature]</i>
Relinquished by:					<i>[Signature]</i>
Relinquished by:					<i>[Signature]</i>
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Color Temperature(s) °C and Other Remarks: 751A 43°-0.1°=42 = <i>[Signature]</i>	

Chain of Custody Record

Client Information		Lab PM		COC No	
Client Contact: Dr. Ron Fenstermacher 808-748-5840		Arada, Rachelle E-Mail: Rachelle.Arada@et.eurofins.com		Camer Tracking No(s) State of Origin: HI	
City and County of Honolulu Address: 630 South Berelania 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: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No PO #: C20525101 exp 05312023 WO #: Project #: 38001111 SSO#: Project Name: RED HILL/HBWS Sites Event Desc RUSH Weekly Red Hill Site: Hawaii		Page: Job #: Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: Total Number of Containers: Special Instructions/Note:	
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastoil, BT=tissue, A=air)	Analysis Requested
AIEA GULCH WELLS PUMP 1					537.1 DW PREC - 537.1 Full List
AIEA GULCH WELLS PUMP 2					533 - All Analytes
AIEA WELLS PUMP 1					525.2 PREC - (MOD) 525 plus Plus TICs
AIEA WELLS PUMP 2					SUBCONTRACT - 8015 Diesel LL (EAL) and Motor Oil
HALAWA WELLS PUMP 1	10/12/23	1100	G		SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL)
HALAWA WELLS PUMP 2					
MOANALUA WELLS					
TB AIEA GULCH WELLS PUMP 1					
TB AIEA GULCH WELLS PUMP 2					
TB AIEA WELLS PUMP (pump number)					
TB HALAWA WELLS PUMP (pump number)	10/12/23	1100	G		
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: Relinquished by: Relinquished by: Relinquished by:		Date: Date/Time: 10/12/23 1200 Date/Time: Date/Time:		Method of Shipment: FED EX 7737 2779 0898 Date/Time: 10/13/2023 09:45 Date/Time: Date/Time:	
Relinquished by: Relinquished by: Relinquished by:		Company: HBWS Company: Company:		Company: Company: Company:	
Custody Seal Intact: Custody Seal No. Cooler Temperature(s) °C and Other Remarks: 751A 4.3 °C. 0.1 = 4.2 = 60°C FROZEN					

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

Chain of Custody Record



Client Information		Lab PM Arada, Rachelle		Carrier Tracking No(s)		COC No	
Client Contact: Dr Ron Fenstermacher		E-Mail Rachelle.Arada@et.eurofins.com		State of Origin		Page 1 of 1	
Company City and County of Honolulu		PWSID#		Analysis Requested		Job #	
Address 630 South Beretania St. Chemistry Lab		Due Date Requested:		Total Number of Containers		Preservation Codes:	
City Honolulu		TAT Requested (days): Standard		537.1_DW_PREC - 537.1 Full List		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - NaHSO4 S - H2SO4 T - TSP Dodecathrate U - Acetone V - NCA W - pH 4-5 Y - Trizma Z - other (specify)	
State, Zip Hawaii 96843		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		537.1 All Analytes		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:	
Phone: 808-748-5841		PO # C20525101 exp 05312023		Perform MS/MSD (Yes or No)		Special Instructions/Note:	
Email RFENSTEMACHER@hbws.org		WG #		Field Filtered Sample (Yes or No)			
Project Name: RED HILL/HBWS Sites Event Desc: RUSH Weekly Red Hill		Project # 38001111		R R R RA RA			
Site Hawaii		SSOW#					
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)	
AIEA GULCH WELLS PUMP 1						Matrix (W=water, S=solid, O=water/soil, BT=Tissue, A=Air)	
AIEA GULCH WELLS PUMP 2						Preservation Code:	
AIEA WELLS PUMP 1							
AIEA WELLS PUMP 2							
HALAWA WELLS PUMP 1		10/12/23		1100		G	
HALAWA WELLS PUMP 2							
MOANALUA WELLS							
TB AIEA GULCH WELLS PUMP 1							
TB AIEA GULCH WELLS PUMP 2		10/12/23					
TB AIEA WELLS PUMP (pump number)				1100		G	
TB HALAWA WELLS PUMP (pump number)							
Possible Hazard Identification		Date:		Time:		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant		Date/Time 10/12/23 1700		Date/Time		<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)		Date/Time 10/12/23 1700		Date/Time		Special Instructions/QC Requirements:	
Empty Kit Relinquished by		Date/Time 10/12/23 1700		Date/Time		Method of Shipment: FEDEX 7337 2779 0898	
Relinquished by <i>M. J. Fenstermacher</i>		Date/Time		Date/Time		Company Company	
Relinquished by		Date/Time		Date/Time		Company Company	
Relinquished by		Date/Time		Date/Time		Company Company	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No:		Cooler Temperature(s) °C and Other Remarks: (75TA) 43° - @ 14-42°		Company Company	



Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-67025-1

Login Number: 67025
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	