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# ANALYTICAL REPORT

## PREPARED FOR

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City & County of Honolulu  
630 South Beretania Street  
Public Service Bldg. Room 310  
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## JOB DESCRIPTION

RED-HILL  
RUSH Weekly Red Hill

## JOB NUMBER

380-43163-1

# Eurofins Eaton Analytical Pomona

## Job Notes

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

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

## Compliance Statement

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

## Authorization



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Authorized for release by  
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# Definitions/Glossary

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

Job ID: 380-43163-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
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.

### GC/MS Semi VOA TICs

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

### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

### Subcontract

Qualifier	Qualifier Description
U	This analyte was not detected.

## 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: 380-43163-1

**Job ID: 380-43163-1**

**Laboratory: Eurofins Eaton Analytical Pomona**

## Narrative

### Job Narrative 380-43163-1

#### Comments

EPA 537.1 and EPA 533 are two distinct methods for the analysis of PFAS in drinking water. The analyses are conducted on differing instrumentation, with calibrations, extraction solvents, sample preservatives, and extraction sorbents being dissimilar among the two methods. Therefore it is probable and not unexpected to see the methods having slight variations in analytical results.

No additional comments.

#### Receipt

The samples were received on 4/11/2023 10:00 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 was 3.0° C.

#### Receipt Exceptions

The Field Sampler was not listed on the Chain of Custody.

#### GC/MS Semi VOA

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

#### LCMS

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

#### Subcontract non-Sister

See attached subcontract report.

#### Organic Prep

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

#### Subcontract Work

Methods 8015 Gas (Purgeable) LL (EAL), 8015 LL DRO/MRO/JP5/JP8: These methods were subcontracted to EMAX Laboratories Inc. The subcontract laboratory certifications are different from that of the facility issuing the final report.

Method 625 PAH Physis LL (EAL) + TICs: This method was subcontracted to Physis Environmental Laboratories. The subcontract laboratory certification is different from that of the facility issuing the final report.

# Detection Summary

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

Job ID: 380-43163-1

**Client Sample ID: HALAWA WELLS UNIT 1**  
**PWSID Number: HI0000331**

**Lab Sample ID: 380-43163-1**

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.3		2.0	ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.3		2.0	ng/L	1		533	Total/NA
Perfluorooctanoic acid (PFOA)	2.0		2.0	ng/L	1		533	Total/NA
Perfluoropentanoic acid (PFPeA)	2.1		2.0	ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.1		2.0	ng/L	1		537.1	Total/NA
Perfluorooctanoic acid (PFOA)	2.2		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 UNIT 1**

**Lab Sample ID: 380-43163-2**

No Detections.

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

**Lab Sample ID: 380-43163-3**

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: 380-43163-1

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

**Lab Sample ID: 380-43163-1**

Date Collected: 04/10/23 09:50

Matrix: Drinking Water

Date Received: 04/11/23 10:00

PWSID Number: HI0000331

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
2,4'-DDD	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
2,4'-DDE	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
2,4'-DDT	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
2,4-Dinitrotoluene	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
2,6-Dinitrotoluene	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
4,4'-DDD	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
4,4'-DDE	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
4,4'-DDT	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Acenaphthene	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Acenaphthylene	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Acetochlor	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Alachlor	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
alpha-BHC	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
alpha-Chlordane	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Anthracene	ND		0.019	ug/L		04/14/23 08:00	04/17/23 16:22	1
Atrazine	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Benz(a)anthracene	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Benzo[a]pyrene	ND		0.019	ug/L		04/14/23 08:00	04/17/23 16:22	1
Benzo[b]fluoranthene	ND		0.019	ug/L		04/14/23 08:00	04/17/23 16:22	1
Benzo[g,h,i]perylene	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Benzo[k]fluoranthene	ND		0.019	ug/L		04/14/23 08:00	04/17/23 16:22	1
beta-BHC	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Bromacil	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Butachlor	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Butylbenzylphthalate	ND		0.49	ug/L		04/14/23 08:00	04/17/23 16:22	1
Caffeine	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Chlorobenzilate	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Chloroneb	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Chlorothalonil (Draconil, Bravo)	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Chlorpyrifos	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Chrysene	ND		0.019	ug/L		04/14/23 08:00	04/17/23 16:22	1
delta-BHC	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Di(2-ethylhexyl)adipate	ND		0.58	ug/L		04/14/23 08:00	04/17/23 16:22	1
Bis(2-ethylhexyl) phthalate	ND		0.58	ug/L		04/14/23 08:00	04/17/23 16:22	1
Diazinon (Qualitative)	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Dibenz(a,h)anthracene	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Diclorvos (DDVP)	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Dieldrin	ND		0.19	ug/L		04/14/23 08:00	04/17/23 16:22	1
Diethylphthalate	ND		0.49	ug/L		04/14/23 08:00	04/17/23 16:22	1
Dimethylphthalate	ND		0.49	ug/L		04/14/23 08:00	04/17/23 16:22	1
Di-n-butyl phthalate	ND		0.97	ug/L		04/14/23 08:00	04/17/23 16:22	1
Di-n-octyl phthalate	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Endosulfan I (Alpha)	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Endosulfan II (Beta)	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Endosulfan sulfate	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Endrin	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Endrin aldehyde	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
EPTC	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Fluoranthene	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1

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# Client Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43163-1**

**Date Collected: 04/10/23 09:50**

**Matrix: Drinking Water**

**Date Received: 04/11/23 10:00**

**PWSID Number: HI0000331**

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
gamma-Chlordane	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Heptachlor	ND		0.039	ug/L		04/14/23 08:00	04/17/23 16:22	1
Heptachlor epoxide (isomer B)	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Hexachlorobenzene	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Hexachlorocyclopentadiene	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Indeno[1,2,3-cd]pyrene	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Isophorone	ND		0.49	ug/L		04/14/23 08:00	04/17/23 16:22	1
Lindane	ND		0.039	ug/L		04/14/23 08:00	04/17/23 16:22	1
Malathion	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Methoxychlor	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Metolachlor	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Metribuzin	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Molinate	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Naphthalene	ND		0.29	ug/L		04/14/23 08:00	04/17/23 16:22	1
Parathion	ND	*+	0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Pendimethalin (Penoxaline)	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Total Permethrin (mixed isomers)	ND		0.19	ug/L		04/14/23 08:00	04/17/23 16:22	1
Phenanthrene	ND		0.039	ug/L		04/14/23 08:00	04/17/23 16:22	1
Propachlor	ND	*+	0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Pyrene	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Simazine	ND	*+	0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Terbacil	ND	*+	0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Terbutylazine	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1
Thiobencarb	ND		0.19	ug/L		04/14/23 08:00	04/17/23 16:22	1
trans-Nonachlor	ND		0.049	ug/L		04/14/23 08:00	04/17/23 16:22	1
Trifluralin	ND		0.097	ug/L		04/14/23 08:00	04/17/23 16:22	1

Tentatively Identified Compound	Est. Result	Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Tentatively Identified Compound	None		ug/L			N/A	04/14/23 08:00	04/17/23 16:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Nitro-m-xylene	98		70 - 130	04/14/23 08:00	04/17/23 16:22	1
Triphenylphosphate	95		70 - 130	04/14/23 08:00	04/17/23 16:22	1
Perylene-d12	88		70 - 130	04/14/23 08:00	04/17/23 16:22	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)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1

Eurofins Eaton Analytical Pomona

# Client Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43163-1**

Date Collected: 04/10/23 09:50

Matrix: Drinking Water

Date Received: 04/11/23 10:00

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
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.3</b>		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.3</b>		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>2.0</b>		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluorobutanoic acid (PFBA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
<b>Perfluoropentanoic acid (PFPeA)</b>	<b>2.1</b>		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 11:42	1
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>			<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C3 HFPO-DA	84		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C6 PFDA	92		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C5 PFHxA	88		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C4 PFHpA	89		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C8 PFOA	95		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C9 PFNA	91		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C7 PFUnA	88		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C2 PFDoA	94		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C4 PFBA	91		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C5 PFPeA	94		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C3 PFBS	108		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C3 PFHxS	101		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C8 PFOS	100		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C2-4:2-FTS	126		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C2-6:2-FTS	118		50 - 200			05/07/23 13:30	05/09/23 11:42	1
13C2-8:2-FTS	115		50 - 200			05/07/23 13:30	05/09/23 11:42	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)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>2.1</b>		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1

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# Client Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43163-1**

Date Collected: 04/10/23 09:50

Matrix: Drinking Water

Date Received: 04/11/23 10:00

PWSID Number: HI0000331

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
<b>Perfluorooctanoic acid (PFOA)</b>	<b>2.2</b>		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
<b>Perfluorohexanesulfonic acid (PFHxS)</b>	<b>2.7</b>		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluorotetradecanoic acid (PFTA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:21	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	117		70 - 130	04/17/23 08:00	04/20/23 10:21	1
13C2 PFHxA	100		70 - 130	04/17/23 08:00	04/20/23 10:21	1
13C2 PFDA	99		70 - 130	04/17/23 08:00	04/20/23 10:21	1
13C3-GenX	98		70 - 130	04/17/23 08:00	04/20/23 10:21	1

**Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Acenaphthene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Acenaphthylene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Anthracene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Biphenyl	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Chrysene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Dibenzo[a,l]pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Dibenzothiophene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		04/12/23 00:00	04/25/23 22:06	1
Fluoranthene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1

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# Client Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43163-1**

Date Collected: 04/10/23 09:50

Matrix: Drinking Water

Date Received: 04/11/23 10:00

PWSID Number: HI0000331

**Method: 625 PAH Physys LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i (Continued)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluorene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Naphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Perylene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Phenanthrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1
Pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 22:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	81		27 - 133	04/12/23 00:00	04/25/23 22:06	1
(d10-Phenanthrene)	85		43 - 129	04/12/23 00:00	04/25/23 22:06	1
(d12-Chrysene)	84		52 - 144	04/12/23 00:00	04/25/23 22:06	1
(d12-Perylene)	75		36 - 161	04/12/23 00:00	04/25/23 22:06	1
(d8-Naphthalene)	73		25 - 125	04/12/23 00:00	04/25/23 22:06	1

**Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GASOLINE	ND	U	0.020		mg/L			04/13/23 17:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE	86		60 - 140		04/13/23 17:05	1

**Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DIESEL	ND	U	0.026		mg/L			04/14/23 20:49	1
JP5	ND	U	0.052		mg/L			04/14/23 20:49	1
JP8	ND	U	0.052		mg/L			04/14/23 20:49	1
MOTOR OIL	ND	U	0.052		mg/L			04/14/23 20:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOBENZENE	78		60 - 130		04/14/23 20:49	1
HEXACOSANE	102		60 - 130		04/14/23 20:49	1

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

**Lab Sample ID: 380-43163-2**

Date Collected: 04/10/23 09:50

Matrix: Water

Date Received: 04/11/23 10:00

**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)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1

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# Client Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43163-2**

Date Collected: 04/10/23 09:50

Matrix: Water

Date Received: 04/11/23 10:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluorooctanoic acid (PFOA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluorobutanoic acid (PFBA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluoropentanoic acid (PFPeA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 07:51	1
Isotope Dilution	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	99		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C6 PFDA	112		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C5 PFHxA	105		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C4 PFHpA	103		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C8 PFOA	105		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C9 PFNA	103		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C7 PFUnA	96		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C2 PFDoA	101		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C4 PFBA	103		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C5 PFPeA	104		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C3 PFBS	108		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C3 PFHxS	102		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C8 PFOS	101		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C2-4:2-FTS	117		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C2-6:2-FTS	107		50 - 200			05/07/23 13:30	05/09/23 07:51	1
13C2-8:2-FTS	162		50 - 200			05/07/23 13:30	05/09/23 07:51	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)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1

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# Client Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43163-2**

Date Collected: 04/10/23 09:50

Matrix: Water

Date Received: 04/11/23 10:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorooctanoic acid (PFOA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorotetradecanoic acid (PFTA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		04/17/23 08:00	04/20/23 10:32	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	101		70 - 130			04/17/23 08:00	04/20/23 10:32	1
13C2 PFHxA	106		70 - 130			04/17/23 08:00	04/20/23 10:32	1
13C2 PFDA	108		70 - 130			04/17/23 08:00	04/20/23 10:32	1
13C3-GenX	102		70 - 130			04/17/23 08:00	04/20/23 10:32	1

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

**Lab Sample ID: 380-43163-3**

Date Collected: 04/10/23 09:50

Matrix: Water

Date Received: 04/11/23 10:00

**Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GASOLINE	ND	U	0.020		mg/L			04/13/23 17:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE	87		60 - 140					04/13/23 17:42	1

# Action Limit Summary

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43163-1**

**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	ND		ug/L	2	0.049	525.2	Total/NA
Atrazine	ND		ug/L	3	0.049	525.2	Total/NA
Benzo[a]pyrene	ND		ug/L	0.2	0.019	525.2	Total/NA
Di(2-ethylhexyl)adipate	ND		ug/L	400	0.58	525.2	Total/NA
Bis(2-ethylhexyl) phthalate	ND		ug/L	6	0.58	525.2	Total/NA
Endrin	ND		ug/L	2	0.097	525.2	Total/NA
Heptachlor	ND		ug/L	0.4	0.039	525.2	Total/NA
Heptachlor epoxide (isomer B)	ND		ug/L	0.2	0.049	525.2	Total/NA
Hexachlorobenzene	ND		ug/L	1	0.049	525.2	Total/NA
Hexachlorocyclopentadiene	ND		ug/L	50	0.049	525.2	Total/NA
Lindane	ND		ug/L	0.2	0.039	525.2	Total/NA
Methoxychlor	ND		ug/L	40	0.097	525.2	Total/NA
Simazine	ND	*+	ug/L	4	0.049	525.2	Total/NA

# Surrogate Summary

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

Job ID: 380-43163-1

## 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)	TPP (70-130)	PRY (70-130)
380-43163-1	HALAWA WELLS UNIT 1	98	95	88

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

## 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)	TPP (70-130)	PRY (70-130)
380-43524-B-1-B DU	Duplicate	95	101	87
380-43158-AJ-1-A MS	Matrix Spike	94	105	93
LCS 380-36672/3-A	Lab Control Sample	95	102	89
LCSD 380-36672/4-A	Lab Control Sample Dup	93	106	90
MB 380-36672/1-A	Method Blank	96	94	80
MRL 380-36672/2-A	Lab Control Sample	97	99	86

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

## 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)
380-43163-1	HALAWA WELLS UNIT 1	117	100	99	98

**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)
380-43163-2	FB: HALAWA WELLS UNIT 1	101	106	108	102
380-43533-D-1-A MS	Matrix Spike	100	112	110	108
380-43533-D-1-B MSD	Matrix Spike Duplicate	101	119	112	115
380-43533-F-1-B DU	Duplicate	101	113	106	110
LCS 380-36947/26-A	Lab Control Sample	100	120	106	111
LCSD 380-36947/27-A	Lab Control Sample Dup	99	121	113	113
MBL 380-36947/24-A	Method Blank	100	103	104	95

# Surrogate Summary

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

Job ID: 380-43163-1

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

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)
MRL 380-36947/25-A	Lab Control Sample	99	107	101	98

**Surrogate Legend**

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

## Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i

Matrix: BlankMatrix

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)				
		Acenaphtl (27-133)	Phenanth (43-129)	CRY (52-144)	NPT (25-125)	PRY (36-161)
105078-B1	Method Blank	89	91	89	77	83
105078-BS1	Lab Control Sample	86	88	88	72	83
105078-BS2	Lab Control Sample Dup	78	86	88	66	83

**Surrogate Legend**

(d10-Acenaphthene) = (d10-Acenaphthene)  
 (d10-Phenanthrene) = (d10-Phenanthrene)  
 CRY = (d12-Chrysene)  
 NPT = (d8-Naphthalene)  
 PRY = (d12-Perylene)

## Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)				
		Acenaphtl (27-133)	Phenanth (43-129)	CRY (52-144)	NPT (25-125)	PRY (36-161)
380-43163-1	HALAWA WELLS UNIT 1	81	85	84	73	75

**Surrogate Legend**

(d10-Acenaphthene) = (d10-Acenaphthene)  
 (d10-Phenanthrene) = (d10-Phenanthrene)  
 CRY = (d12-Chrysene)  
 NPT = (d8-Naphthalene)  
 PRY = (d12-Perylene)

## Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Matrix: Drinking Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)
		BFB (60-140)
380-43163-1	HALAWA WELLS UNIT 1	86

**Surrogate Legend**

BFB = BROMOFLUOROBENZENE

# Surrogate Summary

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

Job ID: 380-43163-1

## Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Matrix: WATER

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

BFB

Lab Sample ID	Client Sample ID
23VGH7D08B	Method Blank

**Surrogate Legend**

BFB = BROMOFLUOROBENZENE

## Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Matrix: WATER

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

BFB

(70-130)

Lab Sample ID	Client Sample ID	BFB (70-130)
23VGH7D08C	LCD	111
23VGH7D08L	Lab Control Sample	107

**Surrogate Legend**

BFB = BROMOFLUOROBENZENE

## Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

Matrix: Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

BFB

(60-140)

Lab Sample ID	Client Sample ID	BFB (60-140)
380-43163-3	TB: HALAWA WELLS UNIT 1	87

**Surrogate Legend**

BFB = BROMOFLUOROBENZENE

## Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO

Matrix: Drinking Water

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

BB

XACOSAI

(60-130)

(60-130)

Lab Sample ID	Client Sample ID	BB (60-130)	XACOSAI (60-130)
380-43163-1	HALAWA WELLS UNIT 1	78	102

**Surrogate Legend**

BB = BROMOBENZENE

HEXACOSANE = HEXACOSANE

## Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO

Matrix: WATER

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

BB

XACOSAI

(60-130)

(60-130)

Lab Sample ID	Client Sample ID	BB (60-130)	XACOSAI (60-130)
23DSD016WC	LCD	83	102
23DSD016WL	Lab Control Sample	70	101
23J5D016WC	LCD	78	91
23J5D016WL	Lab Control Sample	91	101
23J8D016WC	LCD	83	93
23J8D016WL	Lab Control Sample	98	97

**Surrogate Legend**

# Surrogate Summary

Client: City & County of Honolulu

Job ID: 380-43163-1

Project/Site: RED-HILL

BB = BROMOBENZENE

HEXACOSANE = HEXACOSANE

**Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO**

**Matrix: WATER**

**Prep Type: Total/NA**

**Percent Surrogate Recovery (Acceptance Limits)**

BB    .XACOSAI

**Lab Sample ID**

**Client Sample ID**

23DSD016WB

Method Blank

**Surrogate Legend**

BB = BROMOBENZENE

HEXACOSANE = HEXACOSANE

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18

# Isotope Dilution Summary

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

Job ID: 380-43163-1

## 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)
380-43163-1	HALAWA WELLS UNIT 1	84	92	88	89	95	91	88	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)
380-43163-1	HALAWA WELLS UNIT 1	91	94	108	101	100	126	118	115

#### 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)
380-43163-2	FB: HALAWA WELLS UNIT 1	99	112	105	103	105	103	96	101
380-43112-AO-1-A MSD	Matrix Spike Duplicate	97	105	100	97	104	102	83	80
380-43112-AP-1-A MS	Matrix Spike	98	104	104	100	102	104	83	78
LCS 380-39340/25-A	Lab Control Sample	99	111	93	96	103	102	97	100
LCSD 380-39340/26-A	Lab Control Sample Dup	98	109	103	101	104	104	102	100
MBL 380-39340/23-A	Method Blank	95	104	99	100	108	103	101	103
MRL 380-39340/24-A	Lab Control Sample	95	109	97	100	103	101	98	98

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (50-200)	PFPeA (50-200)	C3PFBS (50-200)	C3PFHS (50-200)	C8PFOS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)
380-43163-2	FB: HALAWA WELLS UNIT 1	103	104	108	102	101	117	107	162
380-43112-AO-1-A MSD	Matrix Spike Duplicate	101	99	105	101	97	118	110	185
380-43112-AP-1-A MS	Matrix Spike	107	111	111	106	99	134	118	186
LCS 380-39340/25-A	Lab Control Sample	101	92	97	98	99	105	105	185
LCSD 380-39340/26-A	Lab Control Sample Dup	101	100	112	102	102	114	109	141
MBL 380-39340/23-A	Method Blank	106	103	109	108	105	120	125	117
MRL 380-39340/24-A	Lab Control Sample	103	96	104	99	99	112	110	155

#### Surrogate Legend

HFPODA = 13C3 HFPO-DA

# Isotope Dilution Summary

Job ID: 380-43163-1

Client: City & County of Honolulu

Project/Site: RED-HILL

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

1

2

3

4

5

6

7

8

9

10

11

12

13

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18



# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: MB 380-36672/1-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	MB	MB	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
2,4'-DDD	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
2,4'-DDE	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
2,4'-DDT	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
2,4-Dinitrotoluene	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
2,6-Dinitrotoluene	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
4,4'-DDD	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
4,4'-DDE	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
4,4'-DDT	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Acenaphthene	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Acenaphthylene	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Acetochlor	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Alachlor	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
alpha-BHC	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
alpha-Chlordane	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Anthracene	ND		0.020	ug/L		04/14/23 08:00	04/17/23 13:20	1
Atrazine	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Benz(a)anthracene	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Benzo[a]pyrene	ND		0.020	ug/L		04/14/23 08:00	04/17/23 13:20	1
Benzo[b]fluoranthene	ND		0.020	ug/L		04/14/23 08:00	04/17/23 13:20	1
Benzo[g,h,i]perylene	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Benzo[k]fluoranthene	ND		0.020	ug/L		04/14/23 08:00	04/17/23 13:20	1
beta-BHC	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Bromacil	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Butachlor	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Butylbenzylphthalate	ND		0.50	ug/L		04/14/23 08:00	04/17/23 13:20	1
Caffeine	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Chlorobenzilate	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Chloroneb	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Chlorothalonil (Draconil, Bravo)	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Chlorpyrifos	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Chrysene	ND		0.020	ug/L		04/14/23 08:00	04/17/23 13:20	1
delta-BHC	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Di(2-ethylhexyl)adipate	ND		0.60	ug/L		04/14/23 08:00	04/17/23 13:20	1
Bis(2-ethylhexyl) phthalate	ND		0.60	ug/L		04/14/23 08:00	04/17/23 13:20	1
Diazinon (Qualitative)	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Dibenz(a,h)anthracene	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Diclorvos (DDVP)	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Dieldrin	ND		0.20	ug/L		04/14/23 08:00	04/17/23 13:20	1
Diethylphthalate	ND		0.50	ug/L		04/14/23 08:00	04/17/23 13:20	1
Dimethylphthalate	ND		0.50	ug/L		04/14/23 08:00	04/17/23 13:20	1
Di-n-butyl phthalate	ND		0.99	ug/L		04/14/23 08:00	04/17/23 13:20	1
Di-n-octyl phthalate	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Endosulfan I (Alpha)	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Endosulfan II (Beta)	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Endosulfan sulfate	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Endrin	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Endrin aldehyde	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
EPTC	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1

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# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: MB 380-36672/1-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoranthene	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Fluorene	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
gamma-Chlordane	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Heptachlor	ND		0.040	ug/L		04/14/23 08:00	04/17/23 13:20	1
Heptachlor epoxide (isomer B)	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Hexachlorobenzene	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Hexachlorocyclopentadiene	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Indeno[1,2,3-cd]pyrene	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Isophorone	ND		0.50	ug/L		04/14/23 08:00	04/17/23 13:20	1
Lindane	ND		0.040	ug/L		04/14/23 08:00	04/17/23 13:20	1
Malathion	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Methoxychlor	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Metolachlor	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Metribuzin	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Molinate	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Naphthalene	ND		0.30	ug/L		04/14/23 08:00	04/17/23 13:20	1
Parathion	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Pendimethalin (Penoxaline)	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Total Permethrin (mixed isomers)	ND		0.20	ug/L		04/14/23 08:00	04/17/23 13:20	1
Phenanthrene	ND		0.040	ug/L		04/14/23 08:00	04/17/23 13:20	1
Propachlor	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Pyrene	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Simazine	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Terbacil	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Terbutylazine	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1
Thiobencarb	ND		0.20	ug/L		04/14/23 08:00	04/17/23 13:20	1
trans-Nonachlor	ND		0.050	ug/L		04/14/23 08:00	04/17/23 13:20	1
Trifluralin	ND		0.099	ug/L		04/14/23 08:00	04/17/23 13:20	1

Tentatively Identified Compound	MB Est. Result	MB Qualifier	Unit	D	RT	CAS No.	Prepared	Analyzed	Dil Fac
Unknown	0.829	T J	ug/L		4.01	N/A	04/14/23 08:00	04/17/23 13:20	1
Unknown	0.667	T J	ug/L		5.94	N/A	04/14/23 08:00	04/17/23 13:20	1
Unknown	0.605	T J	ug/L		6.65	N/A	04/14/23 08:00	04/17/23 13:20	1
Unknown	0.609	T J	ug/L		7.70	N/A	04/14/23 08:00	04/17/23 13:20	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Nitro-m-xylene	96		70 - 130	04/14/23 08:00	04/17/23 13:20	1
Triphenylphosphate	94		70 - 130	04/14/23 08:00	04/17/23 13:20	1
Perylene-d12	80		70 - 130	04/14/23 08:00	04/17/23 13:20	1

**Lab Sample ID: LCS 380-36672/3-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4'-DDD	1.99	1.82		ug/L		92	70 - 130
2,4'-DDE	1.99	1.85		ug/L		93	70 - 130
2,4'-DDT	1.99	2.01		ug/L		101	70 - 130

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# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: LCS 380-36672/3-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
2,4-Dinitrotoluene	1.99	2.04		ug/L		103	70 - 130
2,6-Dinitrotoluene	1.99	1.82		ug/L		92	70 - 130
4,4'-DDD	1.99	2.00		ug/L		101	70 - 130
4,4'-DDE	1.99	2.06		ug/L		104	70 - 130
4,4'-DDT	1.99	2.05		ug/L		103	70 - 130
Acenaphthene	1.99	1.95		ug/L		98	70 - 130
Acenaphthylene	1.99	1.89		ug/L		95	70 - 130
Acetochlor	1.99	2.06		ug/L		103	70 - 130
Alachlor	1.99	2.10		ug/L		105	70 - 130
alpha-BHC	1.99	1.95		ug/L		98	70 - 130
alpha-Chlordane	1.99	2.07		ug/L		104	70 - 130
Anthracene	1.99	1.86		ug/L		93	70 - 130
Atrazine	1.99	2.18		ug/L		110	70 - 130
Benz(a)anthracene	1.99	1.98		ug/L		100	70 - 130
Benzo[a]pyrene	1.99	1.95		ug/L		98	70 - 130
Benzo[b]fluoranthene	1.99	2.08		ug/L		105	70 - 130
Benzo[g,h,i]perylene	1.99	2.12		ug/L		107	70 - 130
Benzo[k]fluoranthene	1.99	2.07		ug/L		104	70 - 130
beta-BHC	1.99	1.99		ug/L		100	70 - 130
Bromacil	1.99	2.32		ug/L		117	70 - 130
Butachlor	1.99	2.22		ug/L		112	70 - 130
Butylbenzylphthalate	1.99	2.25		ug/L		113	70 - 130
Caffeine	1.99	1.32		ug/L		67	45 - 137
Chlorobenzilate	1.99	2.08		ug/L		105	70 - 130
Chloroneb	1.99	1.98		ug/L		100	70 - 130
Chlorothalonil (Draconil, Bravo)	1.99	2.03		ug/L		102	70 - 130
Chlorpyrifos	1.99	2.09		ug/L		105	70 - 130
Chrysene	1.99	2.07		ug/L		104	70 - 130
delta-BHC	1.99	1.96		ug/L		99	70 - 130
Di(2-ethylhexyl)adipate	1.99	2.23		ug/L		112	70 - 130
Bis(2-ethylhexyl) phthalate	1.99	2.01		ug/L		101	70 - 130
Diazinon (Qualitative)	1.99	1.87		ug/L		94	15 - 132
Dibenz(a,h)anthracene	1.99	2.18		ug/L		110	70 - 130
Diclorvos (DDVP)	1.99	2.30		ug/L		116	70 - 130
Dieldrin	1.99	1.85		ug/L		93	70 - 130
Diethylphthalate	1.99	2.07		ug/L		104	70 - 130
Dimethylphthalate	1.99	2.05		ug/L		103	70 - 130
Di-n-butyl phthalate	3.97	4.33		ug/L		109	70 - 130
Di-n-octyl phthalate	1.99	1.95		ug/L		98	70 - 130
Endosulfan I (Alpha)	1.99	1.81		ug/L		91	70 - 130
Endosulfan II (Beta)	1.99	2.04		ug/L		103	70 - 130
Endosulfan sulfate	1.99	1.86		ug/L		94	70 - 130
Endrin	1.99	2.21		ug/L		111	70 - 130
Endrin aldehyde	1.99	1.83		ug/L		92	70 - 130
EPTC	1.99	2.15		ug/L		108	70 - 130
Fluoranthene	1.99	2.08		ug/L		105	70 - 130
Fluorene	1.99	2.04		ug/L		103	70 - 130
gamma-Chlordane	1.99	2.13		ug/L		107	70 - 130
Heptachlor	1.99	2.14		ug/L		108	70 - 130

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# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: LCS 380-36672/3-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Heptachlor epoxide (isomer B)	1.99	2.05		ug/L		103	70 - 130
Hexachlorobenzene	1.99	1.93		ug/L		97	70 - 130
Hexachlorocyclopentadiene	1.99	2.06		ug/L		104	70 - 130
Indeno[1,2,3-cd]pyrene	1.99	2.20		ug/L		111	70 - 130
Isophorone	1.99	2.17		ug/L		109	70 - 130
Lindane	1.99	2.04		ug/L		103	70 - 130
Malathion	1.99	2.13		ug/L		107	70 - 130
Methoxychlor	1.99	2.30		ug/L		116	70 - 130
Metolachlor	1.99	2.16		ug/L		109	70 - 130
Metribuzin	1.99	2.12		ug/L		107	70 - 130
Molinate	1.99	2.20		ug/L		111	70 - 130
Naphthalene	1.99	2.00		ug/L		101	70 - 130
Parathion	1.99	2.49		ug/L		125	70 - 130
Pendimethalin (Penoxaline)	1.99	2.07		ug/L		104	70 - 130
Phenanthrene	1.99	1.91		ug/L		96	70 - 130
Propachlor	1.99	2.33		ug/L		118	70 - 130
Pyrene	1.99	2.12		ug/L		107	70 - 130
Simazine	1.99	2.23		ug/L		112	70 - 130
Terbacil	1.99	2.58		ug/L		130	70 - 130
Terbutylazine	1.99	2.09		ug/L		105	70 - 130
Thiobencarb	1.99	2.27		ug/L		114	70 - 130
trans-Nonachlor	1.99	2.10		ug/L		106	70 - 130
Trifluralin	1.99	1.95		ug/L		98	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
2-Nitro-m-xylene	95		70 - 130
Triphenylphosphate	102		70 - 130
Perylene-d12	89		70 - 130

**Lab Sample ID: LCSD 380-36672/4-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
2,4'-DDD	1.99	1.98		ug/L		99	70 - 130	8	20
2,4'-DDE	1.99	2.03		ug/L		102	70 - 130	9	20
2,4'-DDT	1.99	2.16		ug/L		109	70 - 130	7	20
2,4-Dinitrotoluene	1.99	2.25		ug/L		113	70 - 130	10	20
2,6-Dinitrotoluene	1.99	1.96		ug/L		98	70 - 130	7	20
4,4'-DDD	1.99	2.15		ug/L		108	70 - 130	7	20
4,4'-DDE	1.99	2.23		ug/L		112	70 - 130	8	20
4,4'-DDT	1.99	2.21		ug/L		111	70 - 130	7	20
Acenaphthene	1.99	1.99		ug/L		100	70 - 130	2	20
Acenaphthylene	1.99	1.89		ug/L		95	70 - 130	0	20
Acetochlor	1.99	2.25		ug/L		113	70 - 130	9	20
Alachlor	1.99	2.26		ug/L		114	70 - 130	8	20
alpha-BHC	1.99	2.17		ug/L		109	70 - 130	11	20
alpha-Chlordane	1.99	2.30		ug/L		116	70 - 130	10	20

Eurofins Eaton Analytical Pomona

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: LCSD 380-36672/4-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	RPD Limit
							Limits	RPD		
Anthracene	1.99	1.94		ug/L		97	70 - 130	4	20	
Atrazine	1.99	2.59		ug/L		130	70 - 130	17	20	
Benz(a)anthracene	1.99	2.12		ug/L		106	70 - 130	7	20	
Benzo[a]pyrene	1.99	2.08		ug/L		104	70 - 130	6	20	
Benzo[b]fluoranthene	1.99	2.17		ug/L		109	70 - 130	4	20	
Benzo[g,h,i]perylene	1.99	2.28		ug/L		115	70 - 130	7	20	
Benzo[k]fluoranthene	1.99	2.13		ug/L		107	70 - 130	3	20	
beta-BHC	1.99	2.31		ug/L		116	70 - 130	15	20	
Bromacil	1.99	2.55		ug/L		128	70 - 130	9	20	
Butachlor	1.99	2.42		ug/L		122	70 - 130	9	20	
Butylbenzylphthalate	1.99	2.44		ug/L		122	70 - 130	8	20	
Caffeine	1.99	1.58		ug/L		79	45 - 137	17	20	
Chlorobenzilate	1.99	2.26		ug/L		114	70 - 130	9	20	
Chloroneb	1.99	2.12		ug/L		106	70 - 130	7	20	
Chlorothalonil (Draconil, Bravo)	1.99	2.22		ug/L		112	70 - 130	9	20	
Chlorpyrifos	1.99	2.26		ug/L		113	70 - 130	8	20	
Chrysene	1.99	2.07		ug/L		104	70 - 130	0	20	
delta-BHC	1.99	2.09		ug/L		105	70 - 130	6	20	
Di(2-ethylhexyl)adipate	1.99	2.40		ug/L		121	70 - 130	7	20	
Bis(2-ethylhexyl) phthalate	1.99	2.03		ug/L		102	70 - 130	1	20	
Diazinon (Qualitative)	1.99	2.26		ug/L		113	15 - 132	19	20	
Dibenz(a,h)anthracene	1.99	2.27		ug/L		114	70 - 130	4	20	
Diclorvos (DDVP)	1.99	2.25		ug/L		113	70 - 130	2	20	
Dieldrin	1.99	2.02		ug/L		101	70 - 130	8	20	
Diethylphthalate	1.99	2.28		ug/L		114	70 - 130	9	20	
Dimethylphthalate	1.99	2.15		ug/L		108	70 - 130	5	20	
Di-n-butyl phthalate	3.98	4.50		ug/L		113	70 - 130	4	20	
Di-n-octyl phthalate	1.99	1.96		ug/L		98	70 - 130	1	20	
Endosulfan I (Alpha)	1.99	2.05		ug/L		103	70 - 130	13	20	
Endosulfan II (Beta)	1.99	2.19		ug/L		110	70 - 130	7	20	
Endosulfan sulfate	1.99	2.00		ug/L		100	70 - 130	7	20	
Endrin	1.99	2.50		ug/L		126	70 - 130	12	20	
Endrin aldehyde	1.99	2.06		ug/L		103	70 - 130	11	20	
EPTC	1.99	2.15		ug/L		108	70 - 130	0	20	
Fluoranthene	1.99	2.25		ug/L		113	70 - 130	8	20	
Fluorene	1.99	2.14		ug/L		107	70 - 130	4	20	
gamma-Chlordane	1.99	2.33		ug/L		117	70 - 130	9	20	
Heptachlor	1.99	2.25		ug/L		113	70 - 130	5	20	
Heptachlor epoxide (isomer B)	1.99	2.28		ug/L		115	70 - 130	11	20	
Hexachlorobenzene	1.99	2.10		ug/L		105	70 - 130	8	20	
Hexachlorocyclopentadiene	1.99	1.99		ug/L		100	70 - 130	3	20	
Indeno[1,2,3-cd]pyrene	1.99	2.34		ug/L		117	70 - 130	6	20	
Isophorone	1.99	2.16		ug/L		109	70 - 130	0	20	
Lindane	1.99	2.36		ug/L		118	70 - 130	14	20	
Malathion	1.99	2.31		ug/L		116	70 - 130	8	20	
Methoxychlor	1.99	2.40		ug/L		121	70 - 130	4	20	
Metolachlor	1.99	2.35		ug/L		118	70 - 130	9	20	
Metribuzin	1.99	2.40		ug/L		121	70 - 130	12	20	
Molinate	1.99	2.28		ug/L		115	70 - 130	4	20	

Eurofins Eaton Analytical Pomona

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: LCSD 380-36672/4-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Naphthalene	1.99	2.00		ug/L		101	70 - 130	0	20
Parathion	1.99	2.73	*+	ug/L		137	70 - 130	9	20
Pendimethalin (Penoxaline)	1.99	2.28		ug/L		115	70 - 130	10	20
Phenanthrene	1.99	1.97		ug/L		99	70 - 130	3	20
Propachlor	1.99	2.62	*+	ug/L		132	70 - 130	12	20
Pyrene	1.99	2.32		ug/L		116	70 - 130	9	20
Simazine	1.99	2.66	*+	ug/L		134	70 - 130	18	20
Terbacil	1.99	2.71	*+	ug/L		136	70 - 130	5	20
Terbutylazine	1.99	2.43		ug/L		122	70 - 130	15	20
Thiobencarb	1.99	2.45		ug/L		123	70 - 130	8	20
trans-Nonachlor	1.99	2.32		ug/L		117	70 - 130	10	20
Trifluralin	1.99	2.19		ug/L		110	70 - 130	12	20

Surrogate	LCSD %Recovery	LCSD Qualifier	LCSD Limits
2-Nitro-m-xylene	93		70 - 130
Triphenylphosphate	106		70 - 130
Perylene-d12	90		70 - 130

**Lab Sample ID: MRL 380-36672/2-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
2,4'-DDD	0.0993	0.137		ug/L		138	50 - 150
2,4'-DDE	0.0993	0.0944	J	ug/L		95	50 - 150
2,4'-DDT	0.0993	0.0903	J	ug/L		91	50 - 150
2,4-Dinitrotoluene	0.0993	0.0808	J	ug/L		81	50 - 150
2,6-Dinitrotoluene	0.0993	0.0808	J	ug/L		81	50 - 150
4,4'-DDD	0.0993	0.0955	J	ug/L		96	50 - 150
4,4'-DDE	0.0993	0.0809	J	ug/L		81	50 - 150
4,4'-DDT	0.0993	0.0964	J	ug/L		97	50 - 150
Acenaphthene	0.0993	0.0964	J	ug/L		97	50 - 150
Acenaphthylene	0.0993	0.0799	J	ug/L		80	50 - 150
Acetochlor	0.0497	0.0444	J	ug/L		89	50 - 150
Alachlor	0.0497	0.0548		ug/L		110	50 - 150
alpha-BHC	0.0993	0.0999		ug/L		101	50 - 150
alpha-Chlordane	0.0248	ND		ug/L		96	50 - 150
Anthracene	0.0199	0.0193	J	ug/L		97	50 - 150
Atrazine	0.0497	ND		ug/L		94	50 - 150
Benz(a)anthracene	0.0497	0.0417	J	ug/L		84	50 - 150
Benzo[a]pyrene	0.0199	0.0165	J	ug/L		83	50 - 150
Benzo[b]fluoranthene	0.0199	0.0186	J	ug/L		94	50 - 150
Benzo[g,h,i]perylene	0.0497	0.0484	J	ug/L		98	50 - 150
Benzo[k]fluoranthene	0.0199	0.0174	J	ug/L		87	50 - 150
beta-BHC	0.0993	0.0983	J	ug/L		99	50 - 150
Bromacil	0.0993	0.106		ug/L		107	50 - 150
Butachlor	0.0497	0.0529		ug/L		107	50 - 150
Butylbenzylphthalate	0.149	0.164	J	ug/L		110	50 - 150

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: MRL 380-36672/2-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Caffeine	0.0497	0.0304	J	ug/L		61	50 - 150
Chlorobenzilate	0.0993	0.0924	J	ug/L		93	50 - 150
Chloroneb	0.0993	0.0945	J	ug/L		95	50 - 150
Chlorothalonil (Draconil, Bravo)	0.0993	0.0867	J	ug/L		87	50 - 150
Chlorpyrifos	0.0497	0.0467	J	ug/L		94	50 - 150
Chrysene	0.0199	0.0196	J	ug/L		99	50 - 150
delta-BHC	0.0993	0.111		ug/L		111	50 - 150
Di(2-ethylhexyl)adipate	0.298	0.366	J	ug/L		123	50 - 150
Bis(2-ethylhexyl) phthalate	0.596	0.643		ug/L		108	50 - 150
Diazinon (Qualitative)	0.0993	0.0941	J	ug/L		95	15 - 132
Dibenz(a,h)anthracene	0.0497	0.0384	J	ug/L		77	50 - 150
Diclorvos (DDVP)	0.0497	0.0553		ug/L		111	50 - 150
Dieldrin	0.0993	0.0912	J	ug/L		92	50 - 150
Diethylphthalate	0.149	0.164	J	ug/L		110	50 - 150
Dimethylphthalate	0.298	0.290	J	ug/L		97	50 - 150
Di-n-butyl phthalate	0.298	0.350	J	ug/L		118	49 - 243
Di-n-octyl phthalate	0.0993	0.0887	J	ug/L		89	50 - 150
Endosulfan I (Alpha)	0.0993	0.0952	J	ug/L		96	50 - 150
Endosulfan II (Beta)	0.0993	0.0995		ug/L		100	50 - 150
Endosulfan sulfate	0.0993	0.0854	J	ug/L		86	50 - 150
Endrin	0.0993	0.114		ug/L		115	50 - 150
Endrin aldehyde	0.0993	ND		ug/L		83	50 - 150
EPTC	0.0993	0.111		ug/L		112	50 - 150
Fluoranthene	0.0497	0.0513	J	ug/L		103	50 - 150
Fluorene	0.0497	ND		ug/L		100	50 - 150
gamma-Chlordane	0.0248	0.0234	J	ug/L		94	50 - 150
Heptachlor	0.0397	0.0478		ug/L		120	50 - 150
Heptachlor epoxide (isomer B)	0.0497	0.0445	J	ug/L		90	50 - 150
Hexachlorobenzene	0.0497	0.0423	J	ug/L		85	50 - 150
Hexachlorocyclopentadiene	0.0497	0.0470	J	ug/L		95	50 - 150
Indeno[1,2,3-cd]pyrene	0.0497	0.0409	J	ug/L		82	50 - 150
Isophorone	0.0993	0.123	J	ug/L		124	50 - 150
Lindane	0.0397	0.0402		ug/L		101	50 - 150
Malathion	0.0993	0.0918	J	ug/L		92	50 - 150
Methoxychlor	0.0993	0.0980	J	ug/L		99	50 - 150
Metolachlor	0.0497	0.0557		ug/L		112	50 - 150
Metribuzin	0.0497	0.0438	J	ug/L		88	50 - 150
Molinate	0.0993	0.109		ug/L		110	50 - 150
Naphthalene	0.0993	0.117	J	ug/L		118	50 - 150
Parathion	0.0993	0.0868	J	ug/L		87	50 - 150
Pendimethalin (Penoxaline)	0.0993	0.0694	J	ug/L		70	50 - 150
Phenanthrene	0.0199	0.0224	J	ug/L		113	50 - 150
Propachlor	0.0497	0.0555		ug/L		112	50 - 150
Pyrene	0.0497	0.0528		ug/L		106	50 - 150
Simazine	0.0497	0.0542		ug/L		109	50 - 150
Terbacil	0.0993	0.123		ug/L		124	50 - 150
Terbutylazine	0.0993	0.0983	J	ug/L		99	50 - 150
Thiobencarb	0.0993	0.115	J	ug/L		115	50 - 150
trans-Nonachlor	0.0248	ND		ug/L		86	50 - 150

Eurofins Eaton Analytical Pomona



# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: MRL 380-36672/2-A**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Trifluralin	0.0993	0.0738	J	ug/L		74	50 - 150
<b>Surrogate</b>	<b>MRL %Recovery</b>	<b>MRL Qualifier</b>	<b>Limits</b>				
2-Nitro-m-xylene	97		70 - 130				
Triphenylphosphate	99		70 - 130				
Perylene-d12	86		70 - 130				

**Lab Sample ID: 380-43158-AJ-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
2,4'-DDD	ND		1.97	1.89		ug/L		96	70 - 130
2,4'-DDE	ND		1.97	1.91		ug/L		97	70 - 130
2,4'-DDT	ND		1.97	2.01		ug/L		102	70 - 130
2,4-Dinitrotoluene	ND		1.97	2.22		ug/L		112	70 - 130
2,6-Dinitrotoluene	ND		1.97	2.03		ug/L		103	70 - 130
4,4'-DDD	ND		1.97	2.03		ug/L		103	70 - 130
4,4'-DDE	ND		1.97	2.10		ug/L		106	70 - 130
4,4'-DDT	ND		1.97	2.05		ug/L		104	70 - 130
Acenaphthene	ND		1.97	1.98		ug/L		101	70 - 130
Acenaphthylene	ND		1.97	1.97		ug/L		100	70 - 130
Acetochlor	ND		1.97	2.15		ug/L		109	70 - 130
Alachlor	ND		1.97	2.17		ug/L		110	70 - 130
alpha-BHC	ND		1.97	2.00		ug/L		101	70 - 130
alpha-Chlordane	ND		1.97	2.19		ug/L		111	70 - 130
Anthracene	ND		1.97	1.70		ug/L		86	70 - 130
Atrazine	ND		1.97	2.22		ug/L		112	70 - 130
Benz(a)anthracene	ND		1.97	1.96		ug/L		99	70 - 130
Benzo[a]pyrene	ND		1.97	1.99		ug/L		101	70 - 130
Benzo[b]fluoranthene	ND		1.97	2.16		ug/L		109	70 - 130
Benzo[g,h,i]perylene	ND		1.97	2.32		ug/L		118	70 - 130
Benzo[k]fluoranthene	ND		1.97	2.14		ug/L		108	70 - 130
beta-BHC	ND		1.97	1.98		ug/L		101	70 - 130
Bromacil	ND		1.97	2.49		ug/L		126	70 - 130
Butachlor	ND		1.97	2.29		ug/L		116	70 - 130
Butylbenzylphthalate	ND		1.97	2.33		ug/L		118	70 - 130
Caffeine	0.075		1.97	1.94		ug/L		94	46 - 144
Chlorobenzilate	ND		1.97	2.21		ug/L		112	70 - 130
Chloroneb	ND		1.97	2.05		ug/L		104	70 - 130
Chlorothalonil (Draconil, Bravo)	ND		1.97	2.11		ug/L		107	70 - 130
Chlorpyrifos	ND		1.97	2.17		ug/L		110	70 - 130
Chrysene	ND		1.97	2.14		ug/L		108	70 - 130
delta-BHC	ND		1.97	1.98		ug/L		101	70 - 130
Di(2-ethylhexyl)adipate	ND		1.97	2.30		ug/L		117	70 - 130
Bis(2-ethylhexyl) phthalate	ND		1.97	2.19		ug/L		111	70 - 130
Diazinon (Qualitative)	ND		1.97	2.09		ug/L		106	15 - 132
Dibenz(a,h)anthracene	ND		1.97	2.31		ug/L		117	70 - 130



# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43158-AJ-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec Limits
	Result	Qualifier	Added	Result	Qualifier				
Diclorvos (DDVP)	ND		1.97	2.35		ug/L		119	70 - 130
Dieldrin	ND		1.97	1.93		ug/L		98	70 - 130
Diethylphthalate	ND		1.97	2.10		ug/L		107	70 - 130
Dimethylphthalate	ND		1.97	2.11		ug/L		107	70 - 130
Di-n-butyl phthalate	ND		3.95	4.63		ug/L		117	70 - 130
Di-n-octyl phthalate	ND		1.97	2.23		ug/L		113	70 - 130
Endosulfan I (Alpha)	ND		1.97	1.98		ug/L		100	70 - 130
Endosulfan II (Beta)	ND		1.97	2.05		ug/L		104	70 - 130
Endosulfan sulfate	ND		1.97	1.94		ug/L		99	70 - 130
Endrin	ND		1.97	2.38		ug/L		121	70 - 130
Endrin aldehyde	ND		1.97	1.78		ug/L		90	70 - 130
EPTC	ND		1.97	2.28		ug/L		116	70 - 130
Fluoranthene	ND		1.97	2.14		ug/L		108	70 - 130
Fluorene	ND		1.97	2.08		ug/L		105	70 - 130
gamma-Chlordane	ND		1.97	2.25		ug/L		114	70 - 130
Heptachlor	ND		1.97	2.26		ug/L		115	70 - 130
Heptachlor epoxide (isomer B)	ND		1.97	2.21		ug/L		112	70 - 130
Hexachlorobenzene	ND		1.97	2.02		ug/L		102	70 - 130
Hexachlorocyclopentadiene	ND		1.97	2.10		ug/L		107	70 - 130
Indeno[1,2,3-cd]pyrene	ND		1.97	2.39		ug/L		121	70 - 130
Isophorone	ND		1.97	2.18		ug/L		111	70 - 130
Lindane	ND		1.97	2.10		ug/L		106	70 - 130
Malathion	ND		1.97	2.24		ug/L		113	70 - 130
Methoxychlor	ND		1.97	2.50		ug/L		127	70 - 130
Metolachlor	ND		1.97	2.25		ug/L		114	70 - 130
Metribuzin	ND		1.97	2.25		ug/L		114	70 - 130
Molinate	ND		1.97	2.31		ug/L		117	70 - 130
Naphthalene	ND		1.97	2.03		ug/L		103	70 - 130
Parathion	ND	*+ F1	1.97	2.74	F1	ug/L		139	70 - 130
Pendimethalin (Penoxaline)	ND		1.97	2.25		ug/L		114	70 - 130
Phenanthrene	ND		1.97	1.99		ug/L		101	70 - 130
Propachlor	ND	*+	1.97	2.37		ug/L		120	70 - 130
Pyrene	ND		1.97	2.19		ug/L		111	70 - 130
Simazine	ND	*+	1.97	2.24		ug/L		114	70 - 130
Terbacil	ND	*+ F1	1.97	2.65	F1	ug/L		135	70 - 130
Terbutylazine	ND		1.97	2.12		ug/L		108	70 - 130
Thiobencarb	ND		1.97	2.35		ug/L		119	70 - 130
trans-Nonachlor	ND		1.97	2.21		ug/L		112	70 - 130
Trifluralin	ND		1.97	2.07		ug/L		105	70 - 130

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
2-Nitro-m-xylene	94		70 - 130
Triphenylphosphate	105		70 - 130
Perylene-d12	93		70 - 130

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43524-B-1-B DU**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

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

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43524-B-1-B DU**  
**Matrix: Water**  
**Analysis Batch: 36974**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 36672**

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Fluoranthene	ND		ND		ug/L		NC	20
Fluorene	ND		ND		ug/L		NC	20
gamma-Chlordane	ND		ND		ug/L		NC	20
Heptachlor	ND		ND		ug/L		NC	20
Heptachlor epoxide (isomer B)	ND		ND		ug/L		NC	20
Hexachlorobenzene	ND		ND		ug/L		NC	20
Hexachlorocyclopentadiene	ND		ND		ug/L		NC	20
Indeno[1,2,3-cd]pyrene	ND		ND		ug/L		NC	20
Isophorone	ND		ND		ug/L		NC	20
Lindane	ND		ND		ug/L		NC	20
Malathion	ND		ND		ug/L		NC	20
Methoxychlor	ND		ND		ug/L		NC	20
Metolachlor	ND		ND		ug/L		NC	20
Metribuzin	ND		ND		ug/L		NC	20
Molinate	ND		ND		ug/L		NC	20
Naphthalene	ND		ND		ug/L		NC	20
Parathion	ND	+	ND	+	ug/L		NC	20
Pendimethalin (Penoxaline)	ND		ND		ug/L		NC	20
Total Permethrin (mixed isomers)	ND		ND		ug/L		NC	20
Phenanthrene	ND		ND		ug/L		NC	20
Propachlor	ND	+	ND	+	ug/L		NC	20
Pyrene	ND		ND		ug/L		NC	20
Simazine	ND	+	ND	+	ug/L		NC	20
Terbacil	ND	+	ND	+	ug/L		NC	20
Terbutylazine	ND		ND		ug/L		NC	20
Thiobencarb	ND		ND		ug/L		NC	20
trans-Nonachlor	ND		ND		ug/L		NC	20
Trifluralin	ND		ND		ug/L		NC	20
		<b>DU</b>	<b>DU</b>					
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>					
2-Nitro-m-xylene	95		70 - 130					
Triphenylphosphate	101		70 - 130					
Perylene-d12	87		70 - 130					

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

**Lab Sample ID: MBL 380-39340/23-A**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1

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# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: MBL 380-39340/23-A**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluorooctanoic acid (PFOA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluorobutanoic acid (PFBA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluoropentanoic acid (PFPeA)	0.413	J	2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0	ng/L		05/07/23 13:30	05/09/23 06:24	1

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	95		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C6 PFDA	104		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C5 PFHxA	99		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C4 PFHpA	100		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C8 PFOA	108		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C9 PFNA	103		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C7 PFUnA	101		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C2 PFDoA	103		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C4 PFBA	106		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C5 PFPeA	103		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C3 PFBS	109		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C3 PFHxS	108		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C8 PFOS	105		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C2-4:2-FTS	120		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C2-6:2-FTS	125		50 - 200	05/07/23 13:30	05/09/23 06:24	1
13C2-8:2-FTS	117		50 - 200	05/07/23 13:30	05/09/23 06:24	1

Eurofins Eaton Analytical Pomona

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: LCS 380-39340/25-A**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	60.1	58.2		ng/L		97	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.1	55.2		ng/L		92	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.1	57.7		ng/L		96	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.1	57.3		ng/L		95	70 - 130
Perfluorobutanesulfonic acid (PFBS)	60.1	56.5		ng/L		94	70 - 130
Perfluorodecanoic acid (PFDA)	60.1	59.0		ng/L		98	70 - 130
Perfluorododecanoic acid (PFDoA)	60.1	58.8		ng/L		98	70 - 130
Perfluoroheptanoic acid (PFHpA)	60.1	58.1		ng/L		97	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	60.1	56.5		ng/L		94	70 - 130
Perfluorohexanoic acid (PFHxA)	60.1	59.4		ng/L		99	70 - 130
Perfluorononanoic acid (PFNA)	60.1	59.0		ng/L		98	70 - 130
Perfluorooctanesulfonic acid (PFOS)	60.1	57.4		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	60.1	57.0		ng/L		95	70 - 130
Perfluoroundecanoic acid (PFUnA)	60.1	58.5		ng/L		97	70 - 130
Perfluorobutanoic acid (PFBA)	60.1	57.6		ng/L		96	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.1	58.3		ng/L		97	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.1	62.0		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.1	61.3		ng/L		102	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.1	57.8		ng/L		96	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.1	56.6		ng/L		94	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.1	58.3		ng/L		97	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.1	57.5		ng/L		96	70 - 130
Perfluoropentanoic acid (PFPeA)	60.1	58.4		ng/L		97	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.1	58.6		ng/L		97	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	60.1	56.3		ng/L		94	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C3 HFPO-DA	99		50 - 200
13C6 PFDA	111		50 - 200
13C5 PFHxA	93		50 - 200
13C4 PFHpA	96		50 - 200
13C8 PFOA	103		50 - 200
13C9 PFNA	102		50 - 200

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: LCS 380-39340/25-A**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

<i>Isotope Dilution</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
13C7 PFUnA	97		50 - 200
13C2 PFDoA	100		50 - 200
13C4 PFBA	101		50 - 200
13C5 PFPeA	92		50 - 200
13C3 PFBS	97		50 - 200
13C3 PFHxS	98		50 - 200
13C8 PFOS	99		50 - 200
13C2-4:2-FTS	105		50 - 200
13C2-6:2-FTS	105		50 - 200
13C2-8:2-FTS	185		50 - 200

**Lab Sample ID: LCSD 380-39340/26-A**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

<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	56.4		ng/L		94	70 - 130	3	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.1	56.9		ng/L		95	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.1	56.7		ng/L		94	70 - 130	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.1	59.8		ng/L		99	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	60.1	53.1		ng/L		88	70 - 130	6	30
Perfluorodecanoic acid (PFDA)	60.1	57.5		ng/L		96	70 - 130	3	30
Perfluorododecanoic acid (PFDoA)	60.1	58.6		ng/L		97	70 - 130	0	30
Perfluoroheptanoic acid (PFHpA)	60.1	58.7		ng/L		98	70 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	60.1	57.6		ng/L		96	70 - 130	2	30
Perfluorohexanoic acid (PFHxA)	60.1	56.2		ng/L		94	70 - 130	5	30
Perfluorononanoic acid (PFNA)	60.1	56.2		ng/L		93	70 - 130	5	30
Perfluorooctanesulfonic acid (PFOS)	60.1	56.7		ng/L		94	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	60.1	58.8		ng/L		98	70 - 130	3	30
Perfluoroundecanoic acid (PFUnA)	60.1	57.8		ng/L		96	70 - 130	1	30
Perfluorobutanoic acid (PFBA)	60.1	59.5		ng/L		99	70 - 130	3	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.1	59.4		ng/L		99	70 - 130	2	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.1	59.7		ng/L		99	70 - 130	4	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.1	59.4		ng/L		99	70 - 130	3	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.1	53.7		ng/L		89	70 - 130	7	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.1	54.8		ng/L		91	70 - 130	3	30

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: LCSD 380-39340/26-A**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.1	57.4		ng/L		95	70 - 130	2	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.1	58.1		ng/L		97	70 - 130	1	30
Perfluoropentanoic acid (PFPeA)	60.1	58.1		ng/L		97	70 - 130	1	30
Perfluoroheptanesulfonic acid (PFHpS)	60.1	60.7		ng/L		101	70 - 130	4	30
Perfluoropentanesulfonic acid (PFPeS)	60.1	56.7		ng/L		94	70 - 130	1	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	LCSD Limits
13C3 HFPO-DA	98		50 - 200
13C6 PFDA	109		50 - 200
13C5 PFHxA	103		50 - 200
13C4 PFHpA	101		50 - 200
13C8 PFOA	104		50 - 200
13C9 PFNA	104		50 - 200
13C7 PFUnA	102		50 - 200
13C2 PFDoA	100		50 - 200
13C4 PFBA	101		50 - 200
13C5 PFPeA	100		50 - 200
13C3 PFBS	112		50 - 200
13C3 PFHxS	102		50 - 200
13C8 PFOS	102		50 - 200
13C2-4:2-FTS	114		50 - 200
13C2-6:2-FTS	109		50 - 200
13C2-8:2-FTS	141		50 - 200

**Lab Sample ID: MRL 380-39340/24-A**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	2.09		ng/L		104	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	1.97	J	ng/L		98	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	2.05		ng/L		102	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.21		ng/L		110	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	1.97	J	ng/L		98	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.06		ng/L		103	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.16		ng/L		108	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.13		ng/L		106	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	1.99	J	ng/L		99	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.17		ng/L		108	50 - 150

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# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: MRL 380-39340/24-A**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorononanoic acid (PFNA)	2.00	2.11		ng/L		105	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.13		ng/L		106	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.16		ng/L		108	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.36		ng/L		118	50 - 150
Perfluorobutanoic acid (PFBA)	2.00	2.25		ng/L		112	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.00		ng/L		100	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.14		ng/L		107	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.08		ng/L		104	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	1.91	J	ng/L		95	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	2.00	2.02		ng/L		101	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.12		ng/L		106	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	2.06		ng/L		103	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.14		ng/L		107	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	2.07		ng/L		103	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	1.96	J	ng/L		98	50 - 150

Isotope Dilution	MRL %Recovery	MRL Qualifier	MRL Limits
13C3 HFPO-DA	95		50 - 200
13C6 PFDA	109		50 - 200
13C5 PFHxA	97		50 - 200
13C4 PFHpA	100		50 - 200
13C8 PFOA	103		50 - 200
13C9 PFNA	101		50 - 200
13C7 PFUnA	98		50 - 200
13C2 PFDoA	98		50 - 200
13C4 PFBA	103		50 - 200
13C5 PFPeA	96		50 - 200
13C3 PFBS	104		50 - 200
13C3 PFHxS	99		50 - 200
13C8 PFOS	99		50 - 200
13C2-4:2-FTS	112		50 - 200
13C2-6:2-FTS	110		50 - 200
13C2-8:2-FTS	155		50 - 200



# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43112-AO-1-A MSD**

**Matrix: Water**

**Analysis Batch: 39476**

**Client Sample ID: Matrix Spike Duplicate**

**Prep Type: Total/NA**

**Prep Batch: 39340**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier				Limits		
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.02	ND		ng/L		84	70 - 130	0	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.02	ND		ng/L		86	70 - 130	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.02	ND		ng/L		98	70 - 130	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.02	2.05		ng/L		102	70 - 130	5	30
Perfluorobutanesulfonic acid (PFBS)	ND		2.02	ND		ng/L		94	70 - 130	3	30
Perfluorodecanoic acid (PFDA)	ND		2.02	2.11		ng/L		104	70 - 130	7	30
Perfluorododecanoic acid (PFDoA)	ND		2.02	2.06		ng/L		102	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	ND		2.02	2.12		ng/L		105	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	ND		2.02	ND		ng/L		97	70 - 130	0	30
Perfluorohexanoic acid (PFHxA)	ND		2.02	2.18		ng/L		108	70 - 130	4	30
Perfluorononanoic acid (PFNA)	ND		2.02	2.12		ng/L		105	70 - 130	7	30
Perfluorooctanesulfonic acid (PFOS)	ND		2.02	2.12		ng/L		105	70 - 130	4	30
Perfluorooctanoic acid (PFOA)	ND		2.02	2.08		ng/L		103	70 - 130	5	30
Perfluoroundecanoic acid (PFUnA)	ND		2.02	2.04		ng/L		101	70 - 130	4	30
Perfluorobutanoic acid (PFBA)	ND		2.02	2.21		ng/L		109	70 - 130	2	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.02	2.02		ng/L		100	70 - 130	3	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.02	2.07		ng/L		103	70 - 130	1	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.02	2.04		ng/L		101	70 - 130	2	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.02	ND		ng/L		91	70 - 130	1	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		2.02	ND		ng/L		93	70 - 130	2	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.02	2.15		ng/L		106	70 - 130	3	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.02	2.10		ng/L		104	70 - 130	9	30
Perfluoropentanoic acid (PFPeA)	ND		2.02	2.20		ng/L		109	70 - 130	5	30
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.02	2.05		ng/L		101	70 - 130	3	30
Perfluoropentanesulfonic acid (PFPeS)	ND		2.02	ND		ng/L		94	70 - 130	3	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	MSD Limits
13C3 HFPO-DA	97		50 - 200
13C6 PFDA	105		50 - 200
13C5 PFHxA	100		50 - 200
13C4 PFHpA	97		50 - 200
13C8 PFOA	104		50 - 200
13C9 PFNA	102		50 - 200

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43112-AO-1-A MSD**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Matrix Spike Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

<i>Isotope Dilution</i>	<i>MSD %Recovery</i>	<i>MSD Qualifier</i>	<i>Limits</i>
13C7 PFUnA	83		50 - 200
13C2 PFDoA	80		50 - 200
13C4 PFBA	101		50 - 200
13C5 PFPeA	99		50 - 200
13C3 PFBS	105		50 - 200
13C3 PFHxS	101		50 - 200
13C8 PFOS	97		50 - 200
13C2-4:2-FTS	118		50 - 200
13C2-6:2-FTS	110		50 - 200
13C2-8:2-FTS	185		50 - 200

**Lab Sample ID: 380-43112-AP-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.00	ND		ng/L		85	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.00	ND		ng/L		87	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.00	ND		ng/L		94	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.00	ND		ng/L		98	70 - 130
Perfluorobutanesulfonic acid (PFBS)	ND		2.00	ND		ng/L		93	70 - 130
Perfluorodecanoic acid (PFDA)	ND		2.00	ND		ng/L		99	70 - 130
Perfluorododecanoic acid (PFDoA)	ND		2.00	2.04		ng/L		102	70 - 130
Perfluoroheptanoic acid (PFHpA)	ND		2.00	2.03		ng/L		102	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	ND		2.00	ND		ng/L		97	70 - 130
Perfluorohexanoic acid (PFHxA)	ND		2.00	2.10		ng/L		105	70 - 130
Perfluorononanoic acid (PFNA)	ND		2.00	ND		ng/L		99	70 - 130
Perfluorooctanesulfonic acid (PFOS)	ND		2.00	2.04		ng/L		102	70 - 130
Perfluorooctanoic acid (PFOA)	ND		2.00	2.19		ng/L		109	70 - 130
Perfluoroundecanoic acid (PFUnA)	ND		2.00	ND		ng/L		98	70 - 130
Perfluorobutanoic acid (PFBA)	ND		2.00	2.17		ng/L		108	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.00	ND		ng/L		98	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.00	2.06		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.00	ND		ng/L		99	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.00	ND		ng/L		93	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		2.00	ND		ng/L		92	70 - 130

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43112-AP-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 39476**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 39340**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.00	2.09		ng/L		105	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.00	ND		ng/L		96	70 - 130
Perfluoropentanoic acid (PFPeA)	ND		2.00	2.09		ng/L		105	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.00	2.11		ng/L		106	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	ND		2.00	ND		ng/L		98	70 - 130
		<b>MS</b>		<b>MS</b>					
<b>Isotope Dilution</b>	<b>%Recovery</b>	<b>Qualifier</b>							<b>Limits</b>
13C3 HFPO-DA	98								50 - 200
13C6 PFDA	104								50 - 200
13C5 PFHxA	104								50 - 200
13C4 PFHpA	100								50 - 200
13C8 PFOA	102								50 - 200
13C9 PFNA	104								50 - 200
13C7 PFUnA	83								50 - 200
13C2 PFDoA	78								50 - 200
13C4 PFBA	107								50 - 200
13C5 PFPeA	111								50 - 200
13C3 PFBS	111								50 - 200
13C3 PFHxS	106								50 - 200
13C8 PFOS	99								50 - 200
13C2-4:2-FTS	134								50 - 200
13C2-6:2-FTS	118								50 - 200
13C2-8:2-FTS	186								50 - 200

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

**Lab Sample ID: MBL 380-36947/24-A**  
**Matrix: Water**  
**Analysis Batch: 37303**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 36947**

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
N-methylperfluorooctanesulfonamide cetic acid (NMeFOSAA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
N-ethylperfluorooctanesulfonamide cetic acid (NEtFOSAA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorooctanoic acid (PFOA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1

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# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: MBL 380-36947/24-A**  
**Matrix: Water**  
**Analysis Batch: 37303**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 36947**

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		04/17/23 08:00	04/19/23 16:09	1
Surrogate	MBL %Recovery	MBL Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	100		70 - 130			04/17/23 08:00	04/19/23 16:09	1
13C2 PFHxA	103		70 - 130			04/17/23 08:00	04/19/23 16:09	1
13C2 PFDA	104		70 - 130			04/17/23 08:00	04/19/23 16:09	1
13C3-GenX	95		70 - 130			04/17/23 08:00	04/19/23 16:09	1

**Lab Sample ID: LCS 380-36947/26-A**  
**Matrix: Water**  
**Analysis Batch: 37303**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 36947**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	50.1	52.2		ng/L		104	70 - 130
Perfluorooctanesulfonic acid (PFOS)	46.4	47.4		ng/L		102	70 - 130
Perfluoroundecanoic acid (PFUnA)	50.1	49.8		ng/L		99	70 - 130
N-methylperfluorooctanesulfonamide-1,1-diacetic acid (NMeFOSAA)	50.1	48.2		ng/L		96	70 - 130
N-ethylperfluorooctanesulfonamide-1,1-diacetic acid (NEtFOSAA)	50.1	47.1		ng/L		94	70 - 130
Perfluorohexanoic acid (PFHxA)	50.1	51.4		ng/L		103	70 - 130
Perfluorododecanoic acid (PFDoA)	50.1	49.6		ng/L		99	70 - 130
Perfluorooctanoic acid (PFOA)	50.1	53.5		ng/L		107	70 - 130
Perfluorodecanoic acid (PFDA)	50.1	50.7		ng/L		101	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	45.7	48.0		ng/L		105	70 - 130
Perfluorobutanesulfonic acid (PFBS)	44.3	46.1		ng/L		104	70 - 130
Perfluoroheptanoic acid (PFHpA)	50.1	53.4		ng/L		107	70 - 130
Perfluorononanoic acid (PFNA)	50.1	52.7		ng/L		105	70 - 130
Perfluorotetradecanoic acid (PFTA)	50.1	50.0		ng/L		100	70 - 130
Perfluorotridecanoic acid (PFTrDA)	50.1	50.1		ng/L		100	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	46.8	45.5		ng/L		97	70 - 130
11-Chloroeicosfluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	47.3	47.1		ng/L		99	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	47.3	48.7		ng/L		103	70 - 130

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# QC Sample Results

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

Job ID: 380-43163-1

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

<i>Surrogate</i>	<i>LCS LCS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>d5-NEtFOSAA</i>	100		70 - 130
<i>13C2 PFHxA</i>	120		70 - 130
<i>13C2 PFDA</i>	106		70 - 130
<i>13C3-GenX</i>	111		70 - 130

**Lab Sample ID: LCSD 380-36947/27-A**  
**Matrix: Water**  
**Analysis Batch: 37303**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 36947**

<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</i>		<i>RPD</i>	<i>Limit</i>
							<i>Limits</i>	<i>RPD</i>		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	50.1	50.2		ng/L		100	70 - 130	4	30	
Perfluorooctanesulfonic acid (PFOS)	46.4	48.5		ng/L		105	70 - 130	2	30	
Perfluoroundecanoic acid (PFUnA)	50.1	51.3		ng/L		102	70 - 130	3	30	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	50.1	51.1		ng/L		102	70 - 130	6	30	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	50.1	47.4		ng/L		95	70 - 130	1	30	
Perfluorohexanoic acid (PFHxA)	50.1	54.1		ng/L		108	70 - 130	5	30	
Perfluorododecanoic acid (PFDoA)	50.1	52.7		ng/L		105	70 - 130	6	30	
Perfluorooctanoic acid (PFOA)	50.1	53.1		ng/L		106	70 - 130	1	30	
Perfluorodecanoic acid (PFDA)	50.1	53.1		ng/L		106	70 - 130	5	30	
Perfluorohexanesulfonic acid (PFHxS)	45.7	48.0		ng/L		105	70 - 130	0	30	
Perfluorobutanesulfonic acid (PFBS)	44.3	48.1		ng/L		108	70 - 130	4	30	
Perfluoroheptanoic acid (PFHpA)	50.1	53.1		ng/L		106	70 - 130	1	30	
Perfluorononanoic acid (PFNA)	50.1	52.8		ng/L		105	70 - 130	0	30	
Perfluorotetradecanoic acid (PFTA)	50.1	54.0		ng/L		108	70 - 130	8	30	
Perfluorotridecanoic acid (PFTrDA)	50.1	52.3		ng/L		104	70 - 130	4	30	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	46.8	47.7		ng/L		102	70 - 130	5	30	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	47.3	47.3		ng/L		100	70 - 130	1	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	47.3	48.5		ng/L		102	70 - 130	0	30	

<i>Surrogate</i>	<i>LCSD LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
<i>d5-NEtFOSAA</i>	99		70 - 130
<i>13C2 PFHxA</i>	121		70 - 130
<i>13C2 PFDA</i>	113		70 - 130
<i>13C3-GenX</i>	113		70 - 130

# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: MRL 380-36947/25-A**  
**Matrix: Water**  
**Analysis Batch: 37303**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 36947**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.01		ng/L		100	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	2.05		ng/L		111	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.12		ng/L		106	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.19		ng/L		109	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.16		ng/L		108	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.33		ng/L		116	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.05		ng/L		102	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.60		ng/L		130	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.11		ng/L		105	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	2.17		ng/L		119	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.77	2.00		ng/L		113	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.37		ng/L		118	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.21		ng/L		110	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	2.08		ng/L		104	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	2.09		ng/L		104	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	1.87	1.90	J	ng/L		101	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.89	1.82	J	ng/L		96	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	2.07		ng/L		109	50 - 150

Surrogate	MRL %Recovery	MRL Qualifier	MRL Limits
d5-NEtFOSAA	99		70 - 130
13C2 PFHxA	107		70 - 130
13C2 PFDA	101		70 - 130
13C3-GenX	98		70 - 130

**Lab Sample ID: 380-43533-D-1-A MS**  
**Matrix: Water**  
**Analysis Batch: 37303**

**Client Sample ID: Matrix Spike**  
**Prep Type: Total/NA**  
**Prep Batch: 36947**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		50.2	48.5		ng/L		97	70 - 130
Perfluorooctanesulfonic acid (PFOS)	ND		46.5	49.7		ng/L		107	70 - 130
Perfluoroundecanoic acid (PFUnA)	ND		50.2	49.6		ng/L		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		50.2	49.3		ng/L		98	70 - 130

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# QC Sample Results

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

Job ID: 380-43163-1

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

**Lab Sample ID: 380-43533-F-1-B DU**  
**Matrix: Water**  
**Analysis Batch: 37303**

**Client Sample ID: Duplicate**  
**Prep Type: Total/NA**  
**Prep Batch: 36947**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Perfluorotridecanoic acid (PFTTrDA)	ND		ND		ng/L		NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		ND		ng/L		NC	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		ND		ng/L		NC	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		ND		ng/L		NC	30
<b>Surrogate</b>	<b>%Recovery</b>	<b>DU Qualifier</b>	<b>DU</b>	<b>Limits</b>				
d5-NEFOSAA	101			70 - 130				
13C2 PFHxA	113			70 - 130				
13C2 PFDA	106			70 - 130				
13C3-GenX	110			70 - 130				

## Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i

**Lab Sample ID: 105078-B1**  
**Matrix: BlankMatrix**  
**Analysis Batch: O-41034**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: O-41034\_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1-Methylnaphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
1-Methylphenanthrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
2,3,5-Trimethylnaphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
2,6-Dimethylnaphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
2-Methylnaphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Acenaphthene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Acenaphthylene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Anthracene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Benz[a]anthracene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Benzo[a]pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Benzo[b]fluoranthene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Benzo[e]pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Benzo[g,h,i]perylene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Benzo[k]fluoranthene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Biphenyl	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Chrysene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Dibenz[a,h]anthracene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Dibenzo[a,i]pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Dibenzothiophene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Disalicylidenepropanediamine	ND		0.1	0.05	µg/L		04/12/23 00:00	04/25/23 09:52	1
Fluoranthene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Fluorene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Indeno[1,2,3-cd]pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Naphthalene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Perylene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Phenanthrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1

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# QC Sample Results

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

Job ID: 380-43163-1

## Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i (Continued)

**Lab Sample ID: 105078-B1**  
**Matrix: BlankMatrix**  
**Analysis Batch: O-41034**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: O-41034\_P**

Analyte	Blank Result	Blank Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	ND		0.005	0.001	µg/L		04/12/23 00:00	04/25/23 09:52	1
Surrogate	Blank %Recovery	Blank Qualifier	Limits				Prepared	Analyzed	Dil Fac
(d10-Acenaphthene)	89		27 - 133				04/12/23 00:00	04/25/23 09:52	1
(d10-Phenanthrene)	91		43 - 129				04/12/23 00:00	04/25/23 09:52	1
(d12-Chrysene)	89		52 - 144				04/12/23 00:00	04/25/23 09:52	1
(d12-Perylene)	83		36 - 161				04/12/23 00:00	04/25/23 09:52	1
(d8-Naphthalene)	77		25 - 125				04/12/23 00:00	04/25/23 09:52	1

**Lab Sample ID: 105078-BS1**  
**Matrix: BlankMatrix**  
**Analysis Batch: O-41034**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: O-41034\_P**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1-Methylnaphthalene	0.5	0.386		µg/L		77	31 - 128
1-Methylphenanthrene	0.5	0.433		µg/L		87	66 - 127
2,3,5-Trimethylnaphthalene	0.5	0.423		µg/L		85	55 - 122
2,6-Dimethylnaphthalene	0.5	0.418		µg/L		84	48 - 120
2-Methylnaphthalene	0.5	0.389		µg/L		78	47 - 130
Acenaphthene	0.5	0.417		µg/L		83	53 - 131
Acenaphthylene	0.5	0.418		µg/L		84	43 - 140
Anthracene	0.5	0.436		µg/L		87	58 - 135
Benz[a]anthracene	0.5	0.434		µg/L		87	55 - 145
Benzo[a]pyrene	0.5	0.413		µg/L		83	51 - 143
Benzo[b]fluoranthene	0.5	0.441		µg/L		88	46 - 165
Benzo[e]pyrene	0.5	0.426		µg/L		85	42 - 152
Benzo[g,h,i]perylene	0.5	0.446		µg/L		89	63 - 133
Benzo[k]fluoranthene	0.5	0.444		µg/L		89	56 - 145
Biphenyl	0.5	0.418		µg/L		84	56 - 119
Chrysene	0.5	0.425		µg/L		85	56 - 141
Dibenz[a,h]anthracene	0.5	0.476		µg/L		95	55 - 150
Dibenzo[a,i]pyrene	0.5	0.496		µg/L		99	50 - 150
Dibenzothiophene	0.5	0.438		µg/L		88	46 - 126
Disalicylidenepropanediamine	50	39.9		µg/L		80	50 - 150
Fluoranthene	0.5	0.435		µg/L		87	60 - 146
Fluorene	0.5	0.429		µg/L		86	58 - 131
Indeno[1,2,3-cd]pyrene	0.5	0.462		µg/L		92	50 - 151
Naphthalene	0.5	0.38		µg/L		76	41 - 126
Perylene	0.5	0.425		µg/L		85	48 - 141
Phenanthrene	0.5	0.44		µg/L		88	67 - 127
Pyrene	0.5	0.438		µg/L		88	54 - 156
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
(d10-Acenaphthene)	86		27 - 133				
(d10-Phenanthrene)	88		43 - 129				
(d12-Chrysene)	88		52 - 144				
(d12-Perylene)	83		36 - 161				
(d8-Naphthalene)	72		25 - 125				

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# QC Sample Results

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

Job ID: 380-43163-1

## Method: 625 PAH Physis LL (EAL) + TICs - EPA 625 Base/Neutral and Acid Organics i

**Lab Sample ID: 105078-BS2**  
**Matrix: BlankMatrix**  
**Analysis Batch: O-41034**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: O-41034\_P**

Analyte	Spike Added	LCS DUP Result	LCS DUP Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1-Methylnaphthalene	0.5	0.361		µg/L		72	31 - 128	7	30
1-Methylphenanthrene	0.5	0.433		µg/L		87	66 - 127	0	30
2,3,5-Trimethylnaphthalene	0.5	0.401		µg/L		80	55 - 122	6	30
2,6-Dimethylnaphthalene	0.5	0.378		µg/L		76	48 - 120	10	30
2-Methylnaphthalene	0.5	0.365		µg/L		73	47 - 130	7	30
Acenaphthene	0.5	0.388		µg/L		78	53 - 131	6	30
Acenaphthylene	0.5	0.383		µg/L		77	43 - 140	9	30
Anthracene	0.5	0.431		µg/L		86	58 - 135	1	30
Benz[a]anthracene	0.5	0.432		µg/L		86	55 - 145	1	30
Benzo[a]pyrene	0.5	0.433		µg/L		87	51 - 143	5	30
Benzo[b]fluoranthene	0.5	0.445		µg/L		89	46 - 165	1	30
Benzo[e]pyrene	0.5	0.429		µg/L		86	42 - 152	1	30
Benzo[g,h,i]perylene	0.5	0.448		µg/L		90	63 - 133	1	30
Benzo[k]fluoranthene	0.5	0.435		µg/L		87	56 - 145	2	30
Biphenyl	0.5	0.381		µg/L		76	56 - 119	10	30
Chrysene	0.5	0.424		µg/L		85	56 - 141	0	30
Dibenz[a,h]anthracene	0.5	0.481		µg/L		96	55 - 150	1	30
Dibenzo[a,l]pyrene	0.5	0.486		µg/L		97	50 - 150	2	30
Dibenzothiophene	0.5	0.43		µg/L		86	46 - 126	2	30
Disalicylideneprapanediamine	50	41.2		µg/L		82	50 - 150	2	30
Fluoranthene	0.5	0.443		µg/L		89	60 - 146	2	30
Fluorene	0.5	0.404		µg/L		81	58 - 131	6	30
Indeno[1,2,3-cd]pyrene	0.5	0.475		µg/L		95	50 - 151	3	30
Naphthalene	0.5	0.346		µg/L		69	41 - 126	10	30
Perylene	0.5	0.432		µg/L		86	48 - 141	1	30
Phenanthrene	0.5	0.437		µg/L		87	67 - 127	1	30
Pyrene	0.5	0.447		µg/L		89	54 - 156	1	30

Surrogate	LCS DUP %Recovery	LCS DUP Qualifier	Limits
(d10-Acenaphthene)	78		27 - 133
(d10-Phenanthrene)	86		43 - 129
(d12-Chrysene)	88		52 - 144
(d12-Perylene)	83		36 - 161
(d8-Naphthalene)	66		25 - 125

## Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics

**Lab Sample ID: 23VGH7D08B**  
**Matrix: WATER**  
**Analysis Batch: 23VGH7D08**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GASOLINE	ND	U	0.020		mg/L			04/13/23 12:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOFLUOROBENZENE					04/13/23 12:43	1

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# QC Sample Results

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

Job ID: 380-43163-1

## Method: 8015 Gas (Purgeable) LL (EAL) - SW846 8015B Gasoline Range Organics (Continued)

**Lab Sample ID: 23VGH7D08L**  
**Matrix: WATER**  
**Analysis Batch: 23VGH7D08**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
GASOLINE	0.500	0.465		mg/L		93	60 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
BROMOFLUOROBENZENE	107		70 - 130

## Method: 8015 LL DRO/MRO/JP5/JP8 - 8015 - TPH DRO/ORO

**Lab Sample ID: 23DSD016WB**  
**Matrix: WATER**  
**Analysis Batch: 23DSD016W**

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DIESEL	ND	U	0.025		mg/L			04/14/23 15:52	1
JP5	ND	U	0.050		mg/L			04/14/23 15:52	1
JP8	ND	U	0.050		mg/L			04/14/23 15:52	1
MOTOR OIL	ND	U	0.050		mg/L			04/14/23 15:52	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
BROMOBENZENE					04/14/23 15:52	1
HEXACOSANE					04/14/23 15:52	1

**Lab Sample ID: 23DSD016WL**  
**Matrix: WATER**  
**Analysis Batch: 23DSD016W**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
DIESEL	2.50	2.17		mg/L		87	50 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
BROMOBENZENE	70		60 - 130
HEXACOSANE	101		60 - 130

**Lab Sample ID: 23J5D016WL**  
**Matrix: WATER**  
**Analysis Batch: 23DSD016W**

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
JP5	2.50	2.05		mg/L		82	30 - 160

Surrogate	LCS %Recovery	LCS Qualifier	Limits
BROMOBENZENE	91		60 - 130
HEXACOSANE	101		60 - 130



# QC Association Summary

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

Job ID: 380-43163-1

## GC/MS Semi VOA

### Prep Batch: 36672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	525.2	
MB 380-36672/1-A	Method Blank	Total/NA	Water	525.2	
LCS 380-36672/3-A	Lab Control Sample	Total/NA	Water	525.2	
LCSD 380-36672/4-A	Lab Control Sample Dup	Total/NA	Water	525.2	
MRL 380-36672/2-A	Lab Control Sample	Total/NA	Water	525.2	
380-43158-AJ-1-A MS	Matrix Spike	Total/NA	Water	525.2	
380-43524-B-1-B DU	Duplicate	Total/NA	Water	525.2	

### Analysis Batch: 36974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	525.2	36672
MB 380-36672/1-A	Method Blank	Total/NA	Water	525.2	36672
LCS 380-36672/3-A	Lab Control Sample	Total/NA	Water	525.2	36672
LCSD 380-36672/4-A	Lab Control Sample Dup	Total/NA	Water	525.2	36672
MRL 380-36672/2-A	Lab Control Sample	Total/NA	Water	525.2	36672
380-43158-AJ-1-A MS	Matrix Spike	Total/NA	Water	525.2	36672
380-43524-B-1-B DU	Duplicate	Total/NA	Water	525.2	36672

## LCMS

### Prep Batch: 36947

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	537.1 DW	
380-43163-2	FB: HALAWA WELLS UNIT 1	Total/NA	Water	537.1 DW	
MBL 380-36947/24-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-36947/26-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 380-36947/27-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	
MRL 380-36947/25-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-43533-D-1-A MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-43533-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	
380-43533-F-1-B DU	Duplicate	Total/NA	Water	537.1 DW	

### Analysis Batch: 37303

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	537.1	36947
380-43163-2	FB: HALAWA WELLS UNIT 1	Total/NA	Water	537.1	36947
MBL 380-36947/24-A	Method Blank	Total/NA	Water	537.1	36947
LCS 380-36947/26-A	Lab Control Sample	Total/NA	Water	537.1	36947
LCSD 380-36947/27-A	Lab Control Sample Dup	Total/NA	Water	537.1	36947
MRL 380-36947/25-A	Lab Control Sample	Total/NA	Water	537.1	36947
380-43533-D-1-A MS	Matrix Spike	Total/NA	Water	537.1	36947
380-43533-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	36947
380-43533-F-1-B DU	Duplicate	Total/NA	Water	537.1	36947

### Prep Batch: 39340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	533	
380-43163-2	FB: HALAWA WELLS UNIT 1	Total/NA	Water	533	
MBL 380-39340/23-A	Method Blank	Total/NA	Water	533	
LCS 380-39340/25-A	Lab Control Sample	Total/NA	Water	533	
LCSD 380-39340/26-A	Lab Control Sample Dup	Total/NA	Water	533	

Eurofins Eaton Analytical Pomona

# QC Association Summary

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

Job ID: 380-43163-1

## LCMS (Continued)

### Prep Batch: 39340 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MRL 380-39340/24-A	Lab Control Sample	Total/NA	Water	533	
380-43112-AO-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	
380-43112-AP-1-A MS	Matrix Spike	Total/NA	Water	533	

### Analysis Batch: 39476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	533	39340
380-43163-2	FB: HALAWA WELLS UNIT 1	Total/NA	Water	533	39340
MBL 380-39340/23-A	Method Blank	Total/NA	Water	533	39340
LCS 380-39340/25-A	Lab Control Sample	Total/NA	Water	533	39340
LCSD 380-39340/26-A	Lab Control Sample Dup	Total/NA	Water	533	39340
MRL 380-39340/24-A	Lab Control Sample	Total/NA	Water	533	39340
380-43112-AO-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	39340
380-43112-AP-1-A MS	Matrix Spike	Total/NA	Water	533	39340

## Subcontract

### Analysis Batch: O-41034

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	625 PAH Physis LL (EAL) + TICs	O-41034_P
105078-B1	Method Blank	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-41034_P
105078-BS1	Lab Control Sample	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-41034_P
105078-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	625 PAH Physis LL (EAL) + TICs	O-41034_P

### Analysis Batch: 23DSD016W

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	8015 LL DRO/MRO/JP5/J P8	
23DSD016WB	Method Blank	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23DSD016WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23J5D016WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	
23J8D016WL	Lab Control Sample	Total/NA	WATER	8015 LL DRO/MRO/JP5/J P8	

### Analysis Batch: 23VGH7D08

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	8015 Gas (Purgeable) LL (EAL)	
380-43163-3	TB: HALAWA WELLS UNIT 1	Total/NA	Water	8015 Gas (Purgeable) LL (EAL)	

# QC Association Summary

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

Job ID: 380-43163-1

## Subcontract (Continued)

### Analysis Batch: 23VGH7D08 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
23VGH7D08B	Method Blank	Total/NA	WATER	8015 Gas (Purgeable) LL (EAL)	
23VGH7D08L	Lab Control Sample	Total/NA	WATER	8015 Gas (Purgeable) LL (EAL)	

### Prep Batch: O-41034\_P

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-43163-1	HALAWA WELLS UNIT 1	Total/NA	Drinking Water	EPA_625	
105078-B1	Method Blank	Total/NA	BlankMatrix	EPA_625	
105078-BS1	Lab Control Sample	Total/NA	BlankMatrix	EPA_625	
105078-BS2	Lab Control Sample Dup	Total/NA	BlankMatrix	EPA_625	





# Lab Chronicle

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

Job ID: 380-43163-1

## Client Sample ID: HALAWA WELLS UNIT 1

Date Collected: 04/10/23 09:50

Date Received: 04/11/23 10:00

## Lab Sample ID: 380-43163-1

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			36672	OTM3	EA POM	04/14/23 08:00
Total/NA	Analysis	525.2		1	36974	Q8LA	EA POM	04/17/23 16:22
Total/NA	Prep	533			39340	J9ZD	EA POM	05/07/23 13:30
Total/NA	Analysis	533		1	39476	UKYM	EA POM	05/09/23 11:42
Total/NA	Prep	537.1 DW			36947	US1B	EA POM	04/17/23 08:00
Total/NA	Analysis	537.1		1	37303	Y7BM	EA POM	04/20/23 10:21
Total/NA	Prep	EPA_625		1	O-41034_P			04/12/23 00:00
Total/NA	Analysis	625 PAH Physis LL (EAL) + TICs		1	O-41034	YC		04/25/23 22:06
Total/NA	Analysis	8015 Gas (Purgeable) LL (EAL)		1	23VGH7D08	SCerva		04/13/23 17:05
Total/NA	Analysis	8015 LL DRO/MRO/JP5/JP8		1	23DSD016W	SDees		04/14/23 20:49

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

Date Collected: 04/10/23 09:50

Date Received: 04/11/23 10:00

## Lab Sample ID: 380-43163-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			39340	J9ZD	EA POM	05/07/23 13:30
Total/NA	Analysis	533		1	39476	UKYM	EA POM	05/09/23 07:51
Total/NA	Prep	537.1 DW			36947	US1B	EA POM	04/17/23 08:00
Total/NA	Analysis	537.1		1	37303	Y7BM	EA POM	04/20/23 10:32

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

Date Collected: 04/10/23 09:50

Date Received: 04/11/23 10:00

## Lab Sample ID: 380-43163-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8015 Gas (Purgeable) LL (EAL)		1	23VGH7D08	SCerva		04/13/23 17:42

### Laboratory References:

= Physis Environmental Laboratories, 1904 Wright Circle, Anaheim, CA 92806

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: 380-43163-1

## 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	02-29-24

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	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	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,i]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	Caffeine
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	Diazinon (Qualitative)
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: 380-43163-1

## 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
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: 380-43163-1

## 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
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: 380-43163-1

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
625	EPA 625 Base/Neutral and Acid Organics i	EPA	
8015	8015 - TPH DRO/ORO	EPA	
8015B	SW846 8015B Gasoline Range Organics	SW846	
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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

= Physis Environmental Laboratories, 1904 Wright Circle, Anaheim, CA 92806

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: 380-43163-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	PWSID Number
380-43163-1	HALAWA WELLS UNIT 1	Drinking Water	04/10/23 09:50	04/11/23 10:00	HI0000331
380-43163-2	FB: HALAWA WELLS UNIT 1	Water	04/10/23 09:50	04/11/23 10:00	
380-43163-3	TB: HALAWA WELLS UNIT 1	Water	04/10/23 09:50	04/11/23 10:00	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18



3051 Fujita Street  
Torrance, CA 90505  
Tel: (310)-618-8889

Date: 05-10-2023  
EMAX Batch No.: 23D126

Attn: Jackie Contreras

Eurofins Eaton Analytical  
750 Royal Oaks Dr., Suite 100  
Monrovia, CA 91016-3629

Subject: Laboratory Report  
Project: 380-43163

Enclosed is the Laboratory report for samples received on 04/12/23.  
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
380-43163-1	D126-01	04/10/23	WATER	TPH GASOLINE TPH
380-43163-3	D126-02	04/10/23	WATER	TPH GASOLINE

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Caspar J. Pang  
Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that results included in this report meets all TNI & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number CA002912022-24  
ANAB Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing  
California ELAP Accredited Certificate Number 2672







REFERENCE: EMAX-SM02 Rev. 12  
SAMPLE RECEIPT FORM 1

Type of Delivery <input type="checkbox"/> Fedex <input type="checkbox"/> UPS <input type="checkbox"/> GSO <input type="checkbox"/> Others <input checked="" type="checkbox"/> EMAX Courier <input checked="" type="checkbox"/> Client Delivery	Airbill / Tracking Number	ECN 23 D126 Recipient Maria Rivera Date 04/12/23 Time 16:10
--	---------------------------	---

**COC INSPECTION**

<input checked="" type="checkbox"/> Client Name	<input checked="" type="checkbox"/> Client PM/FC	<input type="checkbox"/> Sampler Name	<input checked="" type="checkbox"/> Sampling Date/Time	<input checked="" type="checkbox"/> Sample ID	<input checked="" type="checkbox"/> Matrix
<input checked="" type="checkbox"/> Address	<input checked="" type="checkbox"/> Tel # / Fax #	<input type="checkbox"/> Courier Signature	<input checked="" type="checkbox"/> Analysis Required	<input type="checkbox"/> Preservative (if any)	<input checked="" type="checkbox"/> TAT
Safety Issues (if any)	<input type="checkbox"/> High concentrations expected	<input type="checkbox"/> From Superfund Site	<input type="checkbox"/> Rad screening required		

Note:

**PACKAGING INSPECTION**

Container	<input checked="" type="checkbox"/> Cooler	<input type="checkbox"/> Box	<input type="checkbox"/> Other
Condition	<input type="checkbox"/> Custody Seal	<input type="checkbox"/> Intact	<input type="checkbox"/> Damaged
Packaging	<input checked="" type="checkbox"/> Bubble Pack	<input type="checkbox"/> Styrofoam	<input type="checkbox"/> Popcorn
Temperatures (Cool, ≤6 °C but not frozen)	<input checked="" type="checkbox"/> Cooler 1 2.0/1.8 °C	<input type="checkbox"/> Cooler 2 _____ °C	<input type="checkbox"/> Cooler 3 _____ °C
Thermometer:	<input type="checkbox"/> Cooler 6 _____ °C	<input type="checkbox"/> Cooler 7 _____ °C	<input type="checkbox"/> Cooler 8 _____ °C
	<input type="checkbox"/> Cooler 9 _____ °C	<input type="checkbox"/> Cooler 10 _____ °C	

Comments:  Temperature is out of range. PM was informed IMMEDIATELY.

Note:

**DISCREPANCIES**

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action
1	576	D10	4/12/23 JPS/JPS analysis not indicated on label	R1
2	7.8	D22	2nd label reads: 4/13/23	
4/13				
EA 4/14/23				

pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

**NOTES/OBSERVATIONS:**

SAMPLE MATRIX IS DRINKING WATER?  YES  NO

- LEGEND:**
- |   |  |   |
|---|--|---|
| Code Description-Sample Management  | Code Description-Sample Management                                     | Code Description-Sample Management  |
| <input checked="" type="checkbox"/> D1 Analysis is not indicated in label           | D13 Out of Holding Time  | <input checked="" type="checkbox"/> R1 Proceed as indicated in COC <input type="checkbox"/> Label |
| D2 Analysis mismatch COC vs label   | D14 Bubble is >6mm   | R2 Refer to attached instruction  |
| D3 Sample ID mismatch COC vs label  | D15 No trip blank in cooler  | R3 Cancel the analysis  |
| D4 Sample ID is not indicated in _____  | D16 Preservation not indicated in _____                                | R4 Use vial with smallest bubble first  |
| D5 Container -[improper] [leaking] [broken]   | D17 Preservation mismatch COC vs label                                 | R5 Log-in with latest sampling date and time+1 min  |
| D6 Date/Time is not indicated in _____  | D18 Insufficient chemical preservative                                 | R6 Adjust pH as necessary   |
| D7 Date/Time mismatch COC vs label  | D19 Insufficient Sample  | R7 Filter and preserved as necessary  |
| D8 Sample listed in COC is not received   | D20 No filtration info for dissolved analysis                          | R8 _____  |
| D9 Sample received is not listed in COC   | D21 No sample for moisture determination                               | R9 _____  |
| <input checked="" type="checkbox"/> D10 No initial/date on corrections in COC/label | <input checked="" type="checkbox"/> D22 2nd Date on label is incorrect | R10 _____   |
| D11 Container count mismatch COC vs received  | D23 _____  | R11 _____   |
| D12 Container size mismatch COC vs received   | D24 _____  | R12 _____   |

**REVIEWS:**

Sample Labeling: Maria Rivera / Rivera  
Date: 04/12/23 / 4/12/23

SRF: Rivera  
Date: 4/12/23

PM: EA for RB  
Date: 4/14/23

REPORT ID: 23D126

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EMAX Laboratories, Inc. 5031 Fujita St., Torrance, CA 90505

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5/25/2023

## REPORTING CONVENTIONS

### DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

### ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

### DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

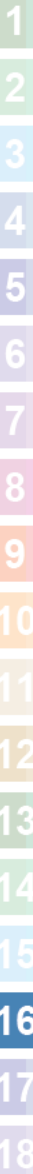
LABORATORY REPORT FOR

EUROFINS EATON ANALYTICAL

380-43163

METHOD 5030B/8015B  
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

SDG#: 23D126



CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-43163

SDG : 23D126

METHOD 5030B/8015B  
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

A total of two(2) water samples were received on 04/12/23 to be analyzed for Total Petroleum Hydrocarbons by Purge and Trap in accordance with Method 5030B/8015B and project specific requirements.

Holding Time

Samples were analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried out on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details. MRL was analyzed as required by the project. Refer to MRL summary form for details.

Method Blank

Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. VGH7D08B - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample

Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. VGH7D08L/VGH7D08C were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample

Matrix spike sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of MS/MSD was analyzed. Gasoline was within MS QC limits in D125-01M/D125-01S. Refer to Matrix QC summary form for details.

Surrogate

Surrogate was added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis

Samples were analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

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# SAMPLE RESULTS





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# QC SUMMARIES



METHOD 5030B/8015B  
TOTAL PETROLEUM HYDROCARBONS BY PURGE AND TRAP

```

=====
Client      : EUROFINS EATON ANALYTICAL   Date Collected: 04/13/23 12:43
Project    : 380-43163                   Date Received: 04/13/23
Batch No.  : 23D126                       Date Extracted: 04/13/23 12:43
Sample ID  : MBLK1W                       Date Analyzed: 04/13/23 12:43
Lab Samp ID: VGH7D08B                     Dilution Factor: 1
Lab File ID: AD13005A                     Matrix: WATER
Ext Btch ID: 23VGH7D08                    % Moisture: NA
Calib. Ref.: AD13004A                     Instrument ID: H7
=====

```

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)	
-----	-----	-----	-----	
GASOLINE	ND	0.020	0.010	
SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
-----	-----	-----	-----	-----
Bromofluorobenzene	0.0353	0.0400	88	60-140
-----	-----	-----	-----	-----

Notes:

Parameter H-C Range

Gasoline C6-C10

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 5ml

Final Volume : 5ml

Prepared by : SCerva

Analyzed by : SCerva

EMAX QUALITY CONTROL DATA  
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL  
PROJECT : 380-43163  
BATCH NO. : 23D126  
METHOD : 5030B/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: VGH7D08B	VGH7D08L	VGH7D08C
LAB FILE ID	: AD13005A	AD13006A	AD13007A
DATE PREPARED	: 04/13/23 12:43	04/13/23 13:20	04/13/23 13:58
DATE ANALYZED	: 04/13/23 12:43	04/13/23 13:20	04/13/23 13:58
PREP BATCH	: 23VGH7D08	23VGH7D08	23VGH7D08
CALIBRATION REF:	AD13004A	AD13004A	AD13004A

ACCESSION:

PARAMETERS	MBResult (mg/L)	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
Gasoline	ND	0.500	0.465	93	0.500	0.491	98	5	60-130	30

SURROGATE PARAMETER	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromofluorobenzene	0.0400	0.0429	107	0.0400	0.0443	111	70-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

EMAX QUALITY CONTROL DATA  
MS/MSD ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL  
PROJECT : 380-43175  
BATCH NO. : 23D125  
METHOD : 5030B/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: 380-43175-1	380-43175-1MS	380-43175-1MSD
LAB SAMPLE ID	: D125-01	D125-01M	D125-01S
LAB FILE ID	: AD13008A	AD13009A	AD13010A
DATE PREPARED	: 04/13/23 14:35	04/13/23 15:13	04/13/23 15:50
DATE ANALYZED	: 04/13/23 14:35	04/13/23 15:13	04/13/23 15:50
PREP BATCH	: 23VGH7D08	23VGH7D08	23VGH7D08
CALIBRATION REF:	AD13004A	AD13004A	AD13004A

ACCESSION:

PARAMETERS	PSResult (mg/L)	SpikeAmt (mg/L)	MSResult (mg/L)	MSRec (%)	SpikeAmt (mg/L)	MSDResult (mg/L)	MSDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
Gasoline	ND	0.500	0.454	91	0.500	0.473	95	4	50-130	30

SURROGATE PARAMETER	SpikeAmt (mg/L)	MSResult (mg/L)	MSRec (%)	SpikeAmt (mg/L)	MSDResult (mg/L)	MSDRec (%)	QCLimit (%)
Bromofluorobenzene	0.0400	0.0435	109	0.0400	0.0451	113	60-140

PS: Parent Sample MS: Matrix Spike MSD: Matrix Spike Duplicate

LABORATORY REPORT FOR

EUROFINS EATON ANALYTICAL

380-43163

METHOD 3520C/8015B  
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

SDG#: 23D126



CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-43163

SDG : 23D126

METHOD 3520C/8015B  
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 04/12/23 to be analyzed for Total Petroleum Hydrocarbons by Extraction in accordance with Method 3520C/8015B and project specific requirements.

Holding Time

The sample was analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried out on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details. MRL was analyzed as required by the project. Refer to MRL summary form for details.

Method Blank

Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. DSD016WB - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample

Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. DSD016WL/DSD016WC were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample

Matrix spike sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of MS/MSD was analyzed. Diesel was within MS QC limits in 23D125-01M/23D125-01S. Refer to Matrix QC summary form for details.

Surrogate

Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis

The sample was analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-43163

SDG : 23D126

METHOD 3520C/8015B  
PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 04/12/23 to be analyzed for Petroleum Hydrocarbons by Extraction in accordance with Method 3520C/8015B and project specific requirements.

Holding Time

The sample was analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried out on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details. MRL was analyzed as required by the project. Refer to MRL summary form for details.

Method Blank

Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. DSD016WB - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample

Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. J5D016WL/J5D016WC were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample

Matrix spike sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of MS/MSD was analyzed. JP5 was within MS QC limits in 23D125-01M/23D125-01S. Refer to Matrix QC summary form for details.

Surrogate

Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis

The sample was analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project: 380-43163

SDG : 23D126

METHOD 3520C/8015B  
PETROLEUM HYDROCARBONS BY EXTRACTION

One(1) water sample was received on 04/12/23 to be analyzed for Petroleum Hydrocarbons by Extraction in accordance with Method 3520C/8015B and project specific requirements.

Holding Time

The sample was analyzed within the prescribed holding time.

Calibration

Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried out on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details. MRL was analyzed as required by the project. Refer to MRL summary form for details.

Method Blank

Method blank was prepared and analyzed at the frequency required by the project. For this SDG, one(1) method blank was analyzed. DSD016WB - result was compliant to project requirement. Refer to sample result summary form for details.

Lab Control Sample

Lab control sample was prepared and analyzed at a frequency required by the project. For this SDG, one(1) set of LCS/LCD was analyzed. J8D016WL/J8D016WC were within LCS limits. Refer to LCS summary form for details.

Matrix QC Sample

No matrix QC sample was provided on this SDG.

Surrogate

Surrogates were added on QC and field samples. All surrogate recoveries were within QC limits. Refer to sample result summary forms for details.

Sample Analysis

The sample was analyzed according to prescribed analytical procedures. Results were evaluated in accordance to project requirements. For this SDG, all quality control requirements were met.

LAB CHRONICLE  
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client : EUROFINS EATON ANALYTICAL  
 Project : 380-43163  
 Laboratory Sample ID : DSD016WB  
 SDG NO. : 23D126  
 Instrument ID : D5

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
380-43163-1	DSD016WB	1	NA	04/14/2315:52	04/13/2313:15	LD13078A	LD13072A	23DSD016W	Method Blank
	DSD016WL	1	NA	04/14/2316:10	04/13/2313:15	LD13079A	LD13072A	23DSD016W	Lab Control Sample (LCS)
	DSD016WC	1	NA	04/14/2316:29	04/13/2313:15	LD13080A	LD13072A	23DSD016W	LCS Duplicate
	D126-01	1	NA	04/14/2320:49	04/13/2313:15	LD13094A	LD13072A	23DSD016W	Field Sample

FN - Filename  
 % Moist - Percent Moisture









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# SAMPLE RESULTS

METHOD 3520C/8015B  
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

```

Client      : EUROFINS EATON ANALYTICAL   Date Collected: 04/10/23 09:50
Project     : 380-43163                   Date Received: 04/12/23
Batch No.   : 23D126                       Date Extracted: 04/13/23 13:15
Sample ID   : 380-43163-1                 Date Analyzed: 04/14/23 20:49
Lab Samp ID : 23D126-01                   Dilution Factor: 1
Lab File ID : LD13094A                     Matrix: WATER
Ext Btch ID : 23DSD016W                   % Moisture: NA
Calib. Ref.: LD13072A                     Instrument ID: D5
  
```

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)	
Diesel	ND	0.026	0.013	
Motor Oil	ND	0.052	0.026	
SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.403	0.515	78	60-130
Hexacosane	0.132	0.129	102	60-130

Notes:

Parameter H-C Range  
Diesel C10-C24  
Motor Oil C24-C36

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 970ml Final Volume : 5ml  
Prepared by : P0reto Analyzed by : SDeeso

METHOD 3520C/8015B  
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	04/10/23 09:50
Project	: 380-43163	Date Received:	04/12/23
Batch No.	: 23D126	Date Extracted:	04/13/23 13:15
Sample ID	: 380-43163-1	Date Analyzed:	04/14/23 20:49
Lab Samp ID:	23D126-01	Dilution Factor:	1
Lab File ID:	LD13094A	Matrix:	WATER
Ext Btch ID:	23DSD016W	% Moisture:	NA
Calib. Ref.:	LD13073A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
JP5	ND	0.052	0.026

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.403	0.515	78	60-130
Hexacosane	0.132	0.129	102	60-130

Notes:

RL : Reporting Limit  
 Parameter H-C Range  
 JP5 C8-C18  
 Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 970ml Final Volume : 5ml  
 Prepared by : P0reto Analyzed by : SDeeso

METHOD 3520C/8015B  
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	04/10/23 09:50
Project	: 380-43163	Date Received:	04/12/23
Batch No.	: 23D126	Date Extracted:	04/13/23 13:15
Sample ID	: 380-43163-1	Date Analyzed:	04/14/23 20:49
Lab Samp ID:	23D126-01	Dilution Factor:	1
Lab File ID:	LD13094A	Matrix:	WATER
Ext Btch ID:	23DS0016W	% Moisture:	NA
Calib. Ref.:	LD13074A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
JP8	ND	0.052	0.026

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.403	0.515	78	60-130
Hexacosane	0.132	0.129	102	60-130

Notes:

RL : Reporting Limit

Parameter H-C Range

JP8 C8-C18

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 970ml

Final Volume : 5ml

Prepared by : P0reto

Analyzed by : SDeeso

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# QC SUMMARIES

METHOD 3520C/8015B  
TOTAL PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	04/13/23 13:15
Project	: 380-43163	Date Received:	04/13/23
Batch No.	: 23D126	Date Extracted:	04/13/23 13:15
Sample ID	: MBLK1W	Date Analyzed:	04/14/23 15:52
Lab Samp ID:	DSD016WB	Dilution Factor:	1
Lab File ID:	LD13078A	Matrix:	WATER
Ext Btch ID:	23DSD016W	% Moisture:	NA
Calib. Ref.:	LD13072A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)	
Diesel	ND	0.025	0.012	
Motor Oil	ND	0.050	0.025	
SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.424	0.500	85	60-130
Hexacosane	0.125	0.125	100	60-130

Notes:

Parameter	H-C Range
Diesel	C10-C24
Motor Oil	C24-C36

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount	: 1000ml	Final Volume	: 5ml
Prepared by	: P0reto	Analyzed by	: SDeeso



EMAX QUALITY CONTROL DATA  
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL  
PROJECT : 380-43163  
BATCH NO. : 23D126  
METHOD : 3520C/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: DSD016WB	DSD016WL	DSD016WC
LAB FILE ID	: LD13078A	LD13079A	LD13080A
DATE PREPARED	: 04/13/23 13:15	04/13/23 13:15	04/13/23 13:15
DATE ANALYZED	: 04/14/23 15:52	04/14/23 16:10	04/14/23 16:29
PREP BATCH	: 23DSD016W	23DSD016W	23DSD016W
CALIBRATION REF:	LD13072A	LD13072A	LD13072A

ACCESSION:

PARAMETERS	MBResult (mg/L)	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
Diesel	ND	2.50	2.17	87	2.50	2.14	86	1	50-130	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.349	70	0.500	0.416	83	60-130
Hexacosane	0.125	0.126	101	0.125	0.128	102	60-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

METHOD 3520C/8015B  
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	04/13/23 13:15
Project	: 380-43163	Date Received:	04/13/23
Batch No.	: 23D126	Date Extracted:	04/13/23 13:15
Sample ID	: MBLK1W	Date Analyzed:	04/14/23 15:52
Lab Samp ID:	DSD016WB	Dilution Factor:	1
Lab File ID:	LD13078A	Matrix:	WATER
Ext Btch ID:	23DSD016W	% Moisture:	NA
Calib. Ref.:	LD13073A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)	
JP5	ND	0.050	0.025	
SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.424	0.500	85	60-130
Hexacosane	0.125	0.125	100	60-130

Notes:

RL : Reporting Limit

Parameter H-C Range

JP5 C8-C18

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 1000ml

Final Volume : 5ml

Prepared by : P0reto

Analyzed by : SDeeso

EMAX QUALITY CONTROL DATA  
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL  
PROJECT : 380-43163  
BATCH NO. : 23D126  
METHOD : 3520C/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: DSD016WB	J5D016WL	J5D016WC
LAB FILE ID	: LD13078A	LD13081A	LD13082A
DATE PREPARED	: 04/13/23 13:15	04/13/23 13:15	04/13/23 13:15
DATE ANALYZED	: 04/14/23 15:52	04/14/23 16:48	04/14/23 17:06
PREP BATCH	: 23DSD016W	23DSD016W	23DSD016W
CALIBRATION REF:	LD13073A	LD13073A	LD13073A

ACCESSION:

PARAMETERS	MBResult (mg/L)	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
JP5	ND	2.50	2.05	82	2.50	1.79	72	14	30-160	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.453	91	0.500	0.392	78	60-130
Hexacosane	0.125	0.126	101	0.125	0.114	91	60-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

METHOD 3520C/8015B  
 PETROLEUM HYDROCARBONS BY EXTRACTION

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	04/13/23 13:15
Project	: 380-43163	Date Received:	04/13/23
Batch No.	: 23D126	Date Extracted:	04/13/23 13:15
Sample ID	: MBLK1W	Date Analyzed:	04/14/23 15:52
Lab Samp ID:	DSD016WB	Dilution Factor:	1
Lab File ID:	LD13078A	Matrix:	WATER
Ext Btch ID:	23DSD016W	% Moisture:	NA
Calib. Ref.:	LD13074A	Instrument ID:	D5

PARAMETERS	RESULTS (mg/L)	RL (mg/L)	MDL (mg/L)
JP8	ND	0.050	0.025

SURROGATE PARAMETERS	RESULT	SPK_AMT	%RECOVERY	QC LIMIT
Bromobenzene	0.424	0.500	85	60-130
Hexacosane	0.125	0.125	100	60-130

Notes:

RL : Reporting Limit

Parameter H-C Range

JP8 C8-C18

Reported ND at RL quantitated per pattern recognition.

Detection limits are reported relative to sample result significant figures.

Sample Amount : 1000ml

Final Volume : 5ml

Prepared by : P0reto

Analyzed by : SDeeso

EMAX QUALITY CONTROL DATA  
LAB CONTROL SAMPLE ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL  
PROJECT : 380-43163  
BATCH NO. : 23D126  
METHOD : 3520C/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: MBLK1W	LCS1W	LCD1W
LAB SAMPLE ID	: DSD016WB	J8D016WL	J8D016WC
LAB FILE ID	: LD13078A	LD13083A	LD13084A
DATE PREPARED	: 04/13/23 13:15	04/13/23 13:15	04/13/23 13:15
DATE ANALYZED	: 04/14/23 15:52	04/14/23 17:25	04/14/23 17:43
PREP BATCH	: 23DSD016W	23DSD016W	23DSD016W
CALIBRATION REF:	LD13074A	LD13074A	LD13074A

ACCESSION:

PARAMETERS	MBResult (mg/L)	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
JP8	ND	2.50	2.48	99	2.50	2.17	87	13	30-160	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	LCSResult (mg/L)	LCSRec (%)	SpikeAmt (mg/L)	LCDResult (mg/L)	LCDRec (%)	QCLimit (%)
Bromobenzene	0.500	0.488	98	0.500	0.413	83	60-130
Hexacosane	0.125	0.121	97	0.125	0.116	93	60-130

MB: Method Blank sample LCS: Lab Control Sample LCD: Lab Control Sample Duplicate

EMAX QUALITY CONTROL DATA  
MS/MSD ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL  
PROJECT : 380-43175  
BATCH NO. : 23D125  
METHOD : 3520C/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: 380-43175-1	380-43175-1MS	380-43175-1MSD
LAB SAMPLE ID	: 23D125-01	23D125-01M	23D125-01S
LAB FILE ID	: LD13089A	LD13090A	LD13091A
DATE PREPARED	: 04/13/23 13:15	04/13/23 13:15	04/13/23 13:15
DATE ANALYZED	: 04/14/23 19:16	04/14/23 19:35	04/14/23 19:53
PREP BATCH	: 23DSD016W	23DSD016W	23DSD016W
CALIBRATION REF:	LD13072A	LD13072A	LD13072A

ACCESSION:

PARAMETERS	PSResult (mg/L)	SpikeAmt (mg/L)	MSResult (mg/L)	MSRec (%)	SpikeAmt (mg/L)	MSDResult (mg/L)	MSDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
Diesel	ND	2.53	2.30	91	2.50	1.90	76	19	50-130	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	MSResult (mg/L)	MSRec (%)	SpikeAmt (mg/L)	MSDResult (mg/L)	MSDRec (%)	QCLimit (%)
Bromobenzene	0.505	0.372	74	0.500	0.317	63	60-130
Hexacosane	0.126	0.139	110	0.125	0.128	102	60-130

PS: Parent Sample MS: Matrix Spike MSD: Matrix Spike Duplicate

EMAX QUALITY CONTROL DATA  
MS/MSD ANALYSIS

CLIENT : EUROFINS EATON ANALYTICAL  
PROJECT : 380-43175  
BATCH NO. : 23D125  
METHOD : 3520C/8015B

MATRIX	: WATER		% MOISTURE:NA
DILUTION FACTOR:	1	1	1
SAMPLE ID	: 380-43175-1	380-43175-1MS	380-43175-1MSD
LAB SAMPLE ID	: 23D125-01	23D125-01M	23D125-01S
LAB FILE ID	: LD13089A	LD13092A	LD13093A
DATE PREPARED	: 04/13/23 13:15	04/13/23 13:15	04/13/23 13:15
DATE ANALYZED	: 04/14/23 19:16	04/14/23 20:12	04/14/23 20:30
PREP BATCH	: 23DSD016W	23DSD016W	23DSD016W
CALIBRATION REF:	LD13073A	LD13073A	LD13073A

ACCESSION:

PARAMETERS	PSResult (mg/L)	SpikeAmt (mg/L)	MSResult (mg/L)	MSRec (%)	SpikeAmt (mg/L)	MSDResult (mg/L)	MSDRec (%)	RPD (%)	QCLimit (%)	MaxRPD (%)
JP5	ND	2.72	2.18	80	2.75	2.06	75	6	30-160	30

SURROGATE PARAMETERS	SpikeAmt (mg/L)	MSResult (mg/L)	MSRec (%)	SpikeAmt (mg/L)	MSDResult (mg/L)	MSDRec (%)	QCLimit (%)
Bromobenzene	0.545	0.458	84	0.550	0.389	71	60-130
Hexacosane	0.136	0.141	103	0.138	0.131	95	60-130

PS: Parent Sample MS: Matrix Spike MSD: Matrix Spike Duplicate

April 28, 2023

Rachelle Arada  
 Eurofins Eaton Analytical  
 750 Royal Oaks Drive  
 Suite 100  
 Monrovia, CA 91016-

Project Name: RED-HILL Project # 38001111 Job # 380-43163-1  
 Physis Project ID: 1407003-387

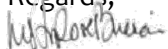
Dear Rachelle,

Enclosed are the analytical results for the sample submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 4/12/2023. A total of 1 sample was received for analysis in accordance with the attached chain of custody (COC). Per the COC, the sample was analyzed for:

Organics
Polynuclear Aromatic Hydrocarbons by EPA 625.1
Disalicylidenepropanediamine by EPA 625.1
Dibenzo [a,l] Pyrene w/ PAHs by EPA 625.1

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,  
  
 Misty Mercier  
 714 602-5320  
 Extension 202  
 mistymercier@physislabs.com



## PROJECT SAMPLE LIST

Eurofins Eaton Analytical

PHYSIS Project ID: 1407003-387

RED-HILL Project # 38001111 Job # 380-43163-1

Total Samples: 1

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
105079	HALAWA WELLS UNIT 1	380-43163-1	4/10/2023	9:50	Samplewater	Not Specified

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## ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

## QUALITY ASSURANCE SUMMARY

**LABORATORY BATCH:** Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

**PROCEDURAL BLANK:** Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

**ACCURACY:** Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

**PRECISION:** Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS<sub>1</sub>/MS<sub>2</sub>, BS<sub>1</sub>/BS<sub>2</sub>, LCS<sub>1</sub>/LCS<sub>2</sub>, LCM<sub>1</sub>/LCM<sub>2</sub>, CRM<sub>1</sub>/CRM<sub>2</sub>, surrogate spikes and/or replicate project sample analysis (R<sub>1</sub>/R<sub>2</sub>) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

**BLANK SPIKES:** BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

**MATRIX SPIKES:** MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

**CERTIFIED REFERENCE MATERIALS:** CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

**LABORATORY CONTROL MATERIAL:** LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

**LABORATORY CONTROL SPIKES:** LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

**SURROGATES:** A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to

the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

**HOLDING TIME:** Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

**SAMPLE STORAGE/RETENTION:** In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

**TOTAL/DISSOLVED FRACTION:** In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

## PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MDL
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

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## CASE NARRATIVE

### QUALIFIER NOTES

In addition to the use of analyte specific Physis Qualifier Codes where applicable, the following were also noted.

#### **ND**

MDL is listed due to report format restrictions; it is not used in reporting. Analytical results reported are ND at the RL.

# BIANALYTICALS REPORT

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## Base/Neutral Extractable Compounds

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 105079-R1    HALAWA WELLS UNIT 1 380-43163- Matrix: Samplewater    Sampled: 10-Apr-23 9:50    Received: 12-Apr-23</b>											
Disalicylidenepropanediamine	EPA 625.1	µg/L	ND	1	0.05	0.1	Total		O-41034	12-Apr-23	25-Apr-23





## Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
<b>Sample ID: 105079-R1 HALAWA WELLS UNIT 1 380-43163- Matrix: Samplewater</b>							<b>Sampled:</b>	<b>10-Apr-23</b>	<b>9:50</b>	<b>Received:</b>	<b>12-Apr-23</b>
(d10-Acenaphthene)	EPA 625.1	% Recovery	81	1			Total		O-41034	12-Apr-23	25-Apr-23
(d10-Phenanthrene)	EPA 625.1	% Recovery	85	1			Total		O-41034	12-Apr-23	25-Apr-23
(d12-Chrysene)	EPA 625.1	% Recovery	84	1			Total		O-41034	12-Apr-23	25-Apr-23
(d12-Perylene)	EPA 625.1	% Recovery	75	1			Total		O-41034	12-Apr-23	25-Apr-23
(d8-Naphthalene)	EPA 625.1	% Recovery	73	1			Total		O-41034	12-Apr-23	25-Apr-23
1-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
1-Methylphenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
2,3,5-Trimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
2,6-Dimethylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
2-Methylnaphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Acenaphthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Acenaphthylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Benz[a]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Benzo[a]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Benzo[b]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Benzo[e]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Benzo[g,h,i]perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Benzo[k]fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Biphenyl	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Chrysene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
D benz[a,h]anthracene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
D benzo[a,l]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
D benzothiophene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23

### Polynuclear Aromatic Hydrocarbons

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Fluoranthene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Fluorene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Indeno[1,2,3-cd]pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Naphthalene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Perylene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Phenanthrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23
Pyrene	EPA 625.1	µg/L	ND	1	0.001	0.005	Total		O-41034	12-Apr-23	25-Apr-23



# QUALITY CONTROL REPORT

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## Base/Neutral Extractable Compounds

## QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
<b>Sample ID: 105078-B1</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>		<b>Received:</b>			
		Method: EPA 625.1			Batch ID: O-41034			Prepared: 12-Apr-23		Analyzed: 25-Apr-23			
Disalicylideneprapanediamin	Total	ND	1	0.05	0.1	µg/L							
<b>Sample ID: 105078-BS1</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>		<b>Received:</b>			
		Method: EPA 625.1			Batch ID: O-41034			Prepared: 12-Apr-23		Analyzed: 25-Apr-23			
Disalicylideneprapanediamin	Total	39.9	1	0.05	0.1	µg/L	50	0	80	50 - 150%	PASS		
<b>Sample ID: 105078-BS2</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>		<b>Received:</b>			
		Method: EPA 625.1			Batch ID: O-41034			Prepared: 12-Apr-23		Analyzed: 25-Apr-23			
Disalicylideneprapanediamin	Total	41.2	1	0.05	0.1	µg/L	50	0	82	50 - 150%	PASS	2	30 PASS

## Polynuclear Aromatic Hydrocarbons

## QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY	PRECISION	QA CODEc	
							LEVEL	RESULT	% LIMITS	% LIMITS		
<b>Sample ID: 105078-B1</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>		<b>Received:</b>		
		Method: EPA 625.1			Batch ID: O-41034			Prepared: 12-Apr-23		Analyzed: 25-Apr-23		
(d10-Acenaphthene)	Total	89	1				% Recovery	100	89	27 - 133%	PASS	
(d10-Phenanthrene)	Total	91	1				% Recovery	100	91	43 - 129%	PASS	
(d12-Chrysene)	Total	89	1				% Recovery	100	89	52 - 144%	PASS	
(d12-Perylene)	Total	83	1				% Recovery	100	83	36 - 161%	PASS	
(d8-Naphthalene)	Total	77	1				% Recovery	100	77	25 - 125%	PASS	
1-Methylnaphthalene	Total	ND	1	0.001	0.005	µg/L						
1-Methylphenanthrene	Total	ND	1	0.001	0.005	µg/L						
2,3,5-Trimethylnaphthalene	Total	ND	1	0.001	0.005	µg/L						
2,6-Dimethylnaphthalene	Total	ND	1	0.001	0.005	µg/L						
2-Methylnaphthalene	Total	ND	1	0.001	0.005	µg/L						
Acenaphthene	Total	ND	1	0.001	0.005	µg/L						
Acenaphthylene	Total	ND	1	0.001	0.005	µg/L						
Anthracene	Total	ND	1	0.001	0.005	µg/L						
Benz[a]anthracene	Total	ND	1	0.001	0.005	µg/L						
Benzo[a]pyrene	Total	ND	1	0.001	0.005	µg/L						
Benzo[b]fluoranthene	Total	ND	1	0.001	0.005	µg/L						
Benzo[e]pyrene	Total	ND	1	0.001	0.005	µg/L						
Benzo[g,h,i]perylene	Total	ND	1	0.001	0.005	µg/L						
Benzo[k]fluoranthene	Total	ND	1	0.001	0.005	µg/L						
Biphenyl	Total	ND	1	0.001	0.005	µg/L						
Chrysene	Total	ND	1	0.001	0.005	µg/L						
Dibenz[a,h]anthracene	Total	ND	1	0.001	0.005	µg/L						
Dibenzo[a,l]pyrene	Total	ND	1	0.001	0.005	µg/L						
Dibenzothiophene	Total	ND	1	0.001	0.005	µg/L						

## Polynuclear Aromatic Hydrocarbons

## QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Fluoranthene	Total	ND	1	0.001	0.005	µg/L							
Fluorene	Total	ND	1	0.001	0.005	µg/L							
Indeno[1,2,3-cd]pyrene	Total	ND	1	0.001	0.005	µg/L							
Naphthalene	Total	ND	1	0.001	0.005	µg/L							
Perylene	Total	ND	1	0.001	0.005	µg/L							
Phenanthrene	Total	ND	1	0.001	0.005	µg/L							
Pyrene	Total	ND	1	0.001	0.005	µg/L							

## Polynuclear Aromatic Hydrocarbons

## QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION	QA CODEc
							LEVEL	RESULT	%	LIMITS	%	LIMITS
<b>Sample ID: 105078-BS1</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>		<b>Received:</b>		
Method: EPA 625.1		Batch ID: O-41034			Prepared: 12-Apr-23		Analyzed: 25-Apr-23					
(d10-Acenaphthene)	Total	86	1			% Recovery	100	0	86	27 - 133%	PASS	
(d10-Phenanthrene)	Total	88	1			% Recovery	100	0	88	43 - 129%	PASS	
(d12-Chrysene)	Total	88	1			% Recovery	100	0	88	52 - 144%	PASS	
(d12-Perylene)	Total	83	1			% Recovery	100	0	83	36 - 161%	PASS	
(d8-Naphthalene)	Total	72	1			% Recovery	100	0	72	25 - 125%	PASS	
1-Methylnaphthalene	Total	0.386	1	0.001	0.005	µg/L	0.5	0	77	31 - 128%	PASS	
1-Methylphenanthrene	Total	0.433	1	0.001	0.005	µg/L	0.5	0	87	66 - 127%	PASS	
2,3,5-Trimethylnaphthalene	Total	0.423	1	0.001	0.005	µg/L	0.5	0	85	55 - 122%	PASS	
2,6-Dimethylnaphthalene	Total	0.418	1	0.001	0.005	µg/L	0.5	0	84	48 - 120%	PASS	
2-Methylnaphthalene	Total	0.389	1	0.001	0.005	µg/L	0.5	0	78	47 - 130%	PASS	
Acenaphthene	Total	0.417	1	0.001	0.005	µg/L	0.5	0	83	53 - 131%	PASS	
Acenaphthylene	Total	0.418	1	0.001	0.005	µg/L	0.5	0	84	43 - 140%	PASS	
Anthracene	Total	0.436	1	0.001	0.005	µg/L	0.5	0	87	58 - 135%	PASS	
Benz[a]anthracene	Total	0.434	1	0.001	0.005	µg/L	0.5	0	87	55 - 145%	PASS	
Benzo[a]pyrene	Total	0.413	1	0.001	0.005	µg/L	0.5	0	83	51 - 143%	PASS	
Benzo[b]fluoranthene	Total	0.441	1	0.001	0.005	µg/L	0.5	0	88	46 - 165%	PASS	
Benzo[e]pyrene	Total	0.426	1	0.001	0.005	µg/L	0.5	0	85	42 - 152%	PASS	
Benzo[g,h,i]perylene	Total	0.446	1	0.001	0.005	µg/L	0.5	0	89	63 - 133%	PASS	
Benzo[k]fluoranthene	Total	0.444	1	0.001	0.005	µg/L	0.5	0	89	56 - 145%	PASS	
Biphenyl	Total	0.418	1	0.001	0.005	µg/L	0.5	0	84	56 - 119%	PASS	
Chrysene	Total	0.425	1	0.001	0.005	µg/L	0.5	0	85	56 - 141%	PASS	
Dibenz[a,h]anthracene	Total	0.476	1	0.001	0.005	µg/L	0.5	0	95	55 - 150%	PASS	
Dibenzo[a,l]pyrene	Total	0.496	1	0.001	0.005	µg/L	0.5	0	99	50 - 150%	PASS	
Dibenzothiophene	Total	0.438	1	0.001	0.005	µg/L	0.5	0	88	46 - 126%	PASS	

## Polynuclear Aromatic Hydrocarbons

## QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE <sub>c</sub>
							LEVEL	RESULT	%	LIMITS	%	LIMITS	
Fluoranthene	Total	0.435	1	0.001	0.005	µg/L	0.5	0	87	60 - 146%	PASS		
Fluorene	Total	0.429	1	0.001	0.005	µg/L	0.5	0	86	58 - 131%	PASS		
Indeno[1,2,3-cd]pyrene	Total	0.462	1	0.001	0.005	µg/L	0.5	0	92	50 - 151%	PASS		
Naphthalene	Total	0.38	1	0.001	0.005	µg/L	0.5	0	76	41 - 126%	PASS		
Perylene	Total	0.425	1	0.001	0.005	µg/L	0.5	0	85	48 - 141%	PASS		
Phenanthrene	Total	0.44	1	0.001	0.005	µg/L	0.5	0	88	67 - 127%	PASS		
Pyrene	Total	0.438	1	0.001	0.005	µg/L	0.5	0	88	54 - 156%	PASS		



## Polynuclear Aromatic Hydrocarbons

## QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODEc		
							LEVEL	RESULT	%	LIMITS	%	LIMITS			
<b>Sample ID: 105078-BS2</b>		<b>QAQC Procedural Blank</b>			<b>Matrix: BlankMatrix</b>			<b>Sampled:</b>			<b>Received:</b>				
		Method: EPA 625.1			Batch ID: O-41034			Prepared: 12-Apr-23			Analyzed: 25-Apr-23				
(d10-Acenaphthene)	Total	78	1				% Recovery	100	0	78	27 - 133%	PASS	10	30	PASS
(d10-Phenanthrene)	Total	86	1				% Recovery	100	0	86	43 - 129%	PASS	2	30	PASS
(d12-Chrysene)	Total	88	1				% Recovery	100	0	88	52 - 144%	PASS	0	30	PASS
(d12-Perylene)	Total	83	1				% Recovery	100	0	83	36 - 161%	PASS	0	30	PASS
(d8-Naphthalene)	Total	66	1				% Recovery	100	0	66	25 - 125%	PASS	9	30	PASS
1-Methylnaphthalene	Total	0.361	1	0.001	0.005	µg/L		0.5	0	72	31 - 128%	PASS	7	30	PASS
1-Methylphenanthrene	Total	0.433	1	0.001	0.005	µg/L		0.5	0	87	66 - 127%	PASS	0	30	PASS
2,3,5-Trimethylnaphthalene	Total	0.401	1	0.001	0.005	µg/L		0.5	0	80	55 - 122%	PASS	6	30	PASS
2,6-Dimethylnaphthalene	Total	0.378	1	0.001	0.005	µg/L		0.5	0	76	48 - 120%	PASS	10	30	PASS
2-Methylnaphthalene	Total	0.365	1	0.001	0.005	µg/L		0.5	0	73	47 - 130%	PASS	7	30	PASS
Acenaphthene	Total	0.388	1	0.001	0.005	µg/L		0.5	0	78	53 - 131%	PASS	6	30	PASS
Acenaphthylene	Total	0.383	1	0.001	0.005	µg/L		0.5	0	77	43 - 140%	PASS	9	30	PASS
Anthracene	Total	0.431	1	0.001	0.005	µg/L		0.5	0	86	58 - 135%	PASS	1	30	PASS
Benz[a]anthracene	Total	0.432	1	0.001	0.005	µg/L		0.5	0	86	55 - 145%	PASS	1	30	PASS
Benzo[a]pyrene	Total	0.433	1	0.001	0.005	µg/L		0.5	0	87	51 - 143%	PASS	5	30	PASS
Benzo[b]fluoranthene	Total	0.445	1	0.001	0.005	µg/L		0.5	0	89	46 - 165%	PASS	1	30	PASS
Benzo[e]pyrene	Total	0.429	1	0.001	0.005	µg/L		0.5	0	86	42 - 152%	PASS	1	30	PASS
Benzo[g,h,i]perylene	Total	0.448	1	0.001	0.005	µg/L		0.5	0	90	63 - 133%	PASS	1	30	PASS
Benzo[k]fluoranthene	Total	0.435	1	0.001	0.005	µg/L		0.5	0	87	56 - 145%	PASS	2	30	PASS
Biphenyl	Total	0.381	1	0.001	0.005	µg/L		0.5	0	76	56 - 119%	PASS	10	30	PASS
Chrysene	Total	0.424	1	0.001	0.005	µg/L		0.5	0	85	56 - 141%	PASS	0	30	PASS
Dibenz[a,h]anthracene	Total	0.481	1	0.001	0.005	µg/L		0.5	0	96	55 - 150%	PASS	1	30	PASS
Dibenzo[a,l]pyrene	Total	0.486	1	0.001	0.005	µg/L		0.5	0	97	50 - 150%	PASS	2	30	PASS
Dibenzothiophene	Total	0.43	1	0.001	0.005	µg/L		0.5	0	86	46 - 126%	PASS	2	30	PASS

## Polynuclear Aromatic Hydrocarbons

## QUALITY CONTROL REPORT

ANALYTE	FRACTION	RESULT	DF	MDL	RL	UNITS	SPIKE	SOURCE	ACCURACY		PRECISION		QA CODE <sub>c</sub>	
							LEVEL	RESULT	%	LIMITS	%	LIMITS		
Fluoranthene	Total	0.443	1	0.001	0.005	µg/L	0.5	0	89	60 - 146%	PASS	2	30	PASS
Fluorene	Total	0.404	1	0.001	0.005	µg/L	0.5	0	81	58 - 131%	PASS	6	30	PASS
Indeno[1,2,3-cd]pyrene	Total	0.475	1	0.001	0.005	µg/L	0.5	0	95	50 - 151%	PASS	3	30	PASS
Naphthalene	Total	0.346	1	0.001	0.005	µg/L	0.5	0	69	41 - 126%	PASS	10	30	PASS
Perylene	Total	0.432	1	0.001	0.005	µg/L	0.5	0	86	48 - 141%	PASS	1	30	PASS
Phenanthrene	Total	0.437	1	0.001	0.005	µg/L	0.5	0	87	67 - 127%	PASS	1	30	PASS
Pyrene	Total	0.447	1	0.001	0.005	µg/L	0.5	0	89	54 - 156%	PASS	1	30	PASS

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**PHYSIS**

**TENTATIVELY**

**IDENTIFIED COMPOUNDS**

ENVIRONMENTAL LABORATORIES, INC.

*Innovative Solutions for Nature*

Sample ID: 105079

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.5138	5.3529	1111	Anthracene-D10-	1719-06-8	97
10.6547	1.4451	300	1,5-Heptadien-4-one, 3,3,6-trimethyl-	546-49-6	89
13.7613	0.7263	151	Benzoic acid	65-85-0	94
10.4625	0.6316	131	Cyclohexane, 1-methyl-2-propyl-	4291-79-6	88
10.0244	0.5743	119	Cyclopentane, 1,2,3,4,5-pentamethyl-	1000152-79-7	88

Concentration estimated using the response for Anthracene-d10

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Sample ID: B1\_41034

Retention Time	Area (% of total)	Concentration (ng/L)	Library/ID	Cas Number	Match Quality (%)
35.5321	6.1101	1111	Anthracene-D10-	1719-06-8	96
10.6558	2.2459	408	1,5-Heptadien-4-one, 3,3,6-trimethyl-	546-49-6	88

Concentration estimated using the response for Anthracene-d10

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# PERFORMANCE CHAIN OF CUSTODY

TERRA ENVIRONMENTAL LABORATORIES, INC. AURA

*Innovative Solutions for Nature*

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Project Iteration ID: 1407003-387  
 Client Name: Eurofins Eaton Analytical  
 Project Name: RED-HILL Project # 38001111 Job # 380-43163-1  
 COC Page Number: 2 of 2  
 Bottle Label Color: NA

**Sample Receipt Summary**

Receiving Info

1. Initials Received By: MN
2. Date Received: 4/12/23
3. Time Received: 10:12
4. Client Name: Eurofins
5. Courier Information: (Please circle)
  - Client
  - UPS
  - Area Fast
  - DRS
  - FedEx
  - GSO/GLS
  - Ontrac
  - PAMS
  - PHYSIS Driver:
    - i. Start Time: \_\_\_\_\_
    - ii. End Time: \_\_\_\_\_
    - iii. Total Mileage: \_\_\_\_\_
    - iv. Number of Pickups: \_\_\_\_\_
6. Container Information: (Please put the # of containers or circle none)
  - Cooler
  - Styrofoam Cooler
  - Boxes
  - None
  - Carboy(s)
  - Carboy Trash Can(s)
  - Carboy Cap(s)
  - Other \_\_\_\_\_
7. What type of ice was used: (Please circle any that apply)
  - Wet Ice
  - Blue Ice
  - Dry Ice
  - Water
  - None
8. Randomly Selected Samples Temperature (°C): 10.2  
 Used I/R Thermometer # 1-2

Inspection Info

1. Initials Inspected By: RGH

Sample Integrity Upon Receipt:

1. COC(s) included and completely filled out.....  Yes /  No
2. All sample containers arrived intact.....  Yes /  No
3. All samples listed on COC(s) are present.....  Yes /  No
4. Information on containers consistent with information on COC(s).....  Yes /  No
5. Correct containers and volume for all analyses indicated.....  Yes /  No
6. All samples received within method holding time.....  Yes /  No
7. Correct preservation used for all analyses indicated..... Yes /  No
8. Name of sampler included on COC(s)..... Yes /  No

Notes:

Sec temp





**Bottle Order Information**

Bottle Order: RUSH RED-HILL WEEKLY  
 Bottle Order #: 2757  
 Request From Client: 3/2/2023  
 Date Order Posted: 7/20/2022 11:12:54AM  
 Order Status: Ready To Process  
 Prepared By: Davis Haley  
**Deliver By Date: 4/5/2023 11:59:00PM**  
 Lab Project Number: 38001111  
 PWSID:

**Order Completion Information**

Creator: Michelle Do  
 Filled by:  
 Sent Date:  
 Sent Via:  
 Tracking #:

Sets	Bottles/Set	Qty	Bottle Type Description	Preservative	Method	Matrix	Sample Type	Comments	Lot #
4	2	8	Amber Glass 1 liter - Sodium Thiosulfate	Sodium Thiosulfate	SUBCONTRACT - 625 PAH Physis LL (EAL) + TICs	Water	Normal	625 PAH	
4	4	16	Voa Vial 40ml - SodiumThio w/HCl-dropper	Sodium Thiosulfate	SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL)	Water	Normal		
4	2	8	Amber Glass 1 L - NaThiosulfate 8mL HCL	Sodium Thiosulfate/Hydrochloric Acid	SUBCONTRACT - 8015 Diesel LL (EAL) and Motor Oil	Water	Normal		
4	2	8	Amber Glass 1 Liter- Sodium Sulfite/HCl	Sodium Sulfite w/HCl	525.2_PREC - (MOD) 525plus Plus TICs	Water	Normal		
4	2	8	VOA Vial 40mL - NaThiosulfate/HCL	Sodium Thiosulfate/Hydrochloric Acid	SUBCONTRACT - 8015 Gas (Purgeable) LL (EAL)	Water	Trip Blank		
5	3	15	Plastic 250ml - Trizma	Trizma	537.1_DW_PREC - 537.1 Full List	Water	Normal		
5	3	15	Plastic 250ml - Ammonium Acetate	Ammonium Acetate	533 - All Analytes	Water	Normal		
5	1	5	Plastic 250ml - Reagent Water	None		Water	Field Blank		
5	1	5	Plastic 250ml - Ammonium Acetate	Ammonium Acetate		Water	Field Blank		
5	1	5	Plastic 250ml - Reagent Water	None		Water	Field Blank		
5	1	5	Plastic 250ml - Trizma	Trizma		Water	Field Blank		

Inform your PM immediately if an error is found in shipment. When returning samples, please return all provided QC samples.



**Total Bottle Summary**

Bottle Type Description	Preservative	Bottle Count
Amber Glass 1 L - NaThiosulfate 8mL HCL	Sodium Thiosulfate/Hydrochloric Acid	8
Amber Glass 1 liter - Sodium Thiosulfate	Sodium Thiosulfate	8
Amber Glass 1 Liter- Sodium Sulfite/HCl	Sodium Sulfite w/HCl	8
Plastic 250ml - Reagent Water	None	10
Plastic 250ml - Trizma	Trizma	20
Plastic 250ml - Ammonium Acetate	Ammonium Acetate	20
VOA Vial 40mL - NaThiosulfate/HCL	Sodium Thiosulfate/Hydrochloric Acid	8
Voa Vial 40ml - SodiumThio w/HCl-dropper	Sodium Thiosulfate	16
<b>Total Bottles:</b>		<b>98</b>

**Notes to Field Staff:**



Scan QR code for field sampler instructions

SAMPLER FOLLOW 2 STAGE FIELD PRESERVATION FOR 8015 and 525.2

**Health and Safety Notes:**

Preservative	Comment
Ammonium Acetate	Caution! May cause eye, skin, and respiratory tract irritation. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
Sodium Sulfite w/HCl	CAUTION! CONTAINS SODIUM SULFITE. Harmful if inhaled. Use adequate ventilation. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
Sodium Thiosulfate	CAUTION! CONTAINS 10% SODIUM THIOSULFATE. Harmful if inhaled. Use adequate ventilation. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
Sodium Thiosulfate/Hydrochloric Acid	CAUTION! CONTAINS 10% SODIUM THIOSULFATE. Harmful if inhaled. Use adequate ventilation. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water. Contains 13.3% Monochloroacetic Acid. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
	CAUTION! CONTAINS 1:1 HYDROCHLORIC ACID. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.
Trizma	CAUTION! May cause eye, skin, and respiratory tract irritation

Relinquished By	Company	Date	Time	Received By	Company	Seal #:
						Seal #:
						Seal #:
Relinquished By	Company	Date	Time	Received By	Company	Seal #:
						Seal #:
						Seal #:

Please notify your PM immediately if an error is found in shipment. When returning samples, please return all provided QC samples.

# Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-43163-1

**Login Number: 43163**

**List Source: Eurofins Eaton Analytical Pomona**

**List Number: 1**

**Creator: Sanchez Velasquez, Gustavo**

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.	False	Field sampler's name is missing.
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	

