



ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

Kahalui Fire Training Pit Study

JOB NUMBER

320-104763-1

Eurofins Sacramento

Job Notes

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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 Environment Testing Northern California, LLC Project Manager.

Authorization



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Definitions/Glossary

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
B	Compound was found in the blank and sample.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.

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: Hawaii Department of Health
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Laboratory: Eurofins Sacramento

Narrative

Comments

As requested, all containers were filtered with a 0.45 micron filter prior to extraction and/or analysis.

Receipt

The samples were received on 9/12/2023 9:30 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 4.8° C.

LCMS

Method 537 (modified): The labeled analyte M2-4:2FTS is employed in this analysis as a "Reverse Surrogate". It is used to monitor the oxidation efficiency of the TOP assay. This analyte is fortified into all sample fractions prior to any processing. The recovery of this analyte should be 0% in Post-Treatment fractions, indicating complete oxidation of the sample. For some or for all of the results for the following samples the reverse surrogate did not go to 0% due to sample matrix interference: KHFTA-MW1 (320-104763-1), KHFTA-MW2 (320-104763-2), KHFTA-MW4 (320-104763-4), KHFTA-MW5 (320-104763-5), KHFTA-MW7 (320-104763-6), KHFTA-MW9 (320-104763-8), & KHFTA-MW11 (320-104763-9), (MB 320-707539/1-A), (LCS 320-107539/2-A), (LCSD 320-107539/3-A), (MB 320-709748/1-A), (LCS 320-709748/2-A), & (LCSD 320-709748/3-A).

Method 537 (modified): Zero percent recovery of precursor analytes (such as 4:2 FTS, 6:2 FTS, 8:2 FTS, FOSA, NMeFOSAA, NEtFOSAA, etc.) and enhanced recoveries of PFCA is observed in the Post-Treatment Laboratory Control Sample (LCS) and Post-Treatment Laboratory Control Sample Duplicate (LCSD) associated with these samples, consistent with the expected oxidation of precursor analytes. The existing LCS control limits are based upon our historical performance for a set of 24-36 analytes in the LCS solution. We have recently expanded to 70+ analytes. As the LCS solution now contains new/additional precursor analytes we are seeing enhanced recoveries for some PFCA vs. the historical limits as a result. The LCS results are flagged as being high and outside of the established limits for some analytes; however, this is a function of the new analytes in the LCS solution and not indicative of an "out of control" process. (LCS 320-107539/2-A), (LCSD 320-107539/3-A), (LCS 320-709748/2-A), & (LCSD 320-709748/3-A).

Method 537 (modified): The transition mass ratio was outside of the established ratio limit for 3:3 FTCA in the CCVL (320-710352/5) associated with this data set, as indicated by the "R" flag in the raw data. The analyte response is in control in the CCVL so there is no adverse impact on reported results.

Method 537 (modified): Some or all results for samples KHFTA-MW1 (320-104763-1), KHFTA-MW2 (320-104763-2), KHFTA-MW3 (320-104763-3), KHFTA-MW4 (320-104763-4), KHFTA-MW5 (320-104763-5), KHFTA-MW7 (320-104763-6), & KHFTA-MW9 (320-104763-8) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method 537 (modified): One or more isotope Dilution Analyte (IDA) recoveries are above the method recommended limit for the following samples: KHFTA-MW1 (320-104763-1), KHFTA-MW4 (320-104763-4), KHFTA-MW5 (320-104763-5), KHFTA-MW7 (320-104763-6), (MB 320-709747/1-A), (LCS 320-709747/2-A), & (LCSD 320-709747/3-A). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method 537 (modified): The laboratory control sample duplicate (LCSD) for preparation batch 320-707539 recovered low outside control limits for the following analytes: Nonfluoro-3,6-dioxahexanoic acid (NFDHA). Re-analysis confirms the low recoveries. The recovery is being compared to the laboratory default limits. As additional data points are analyzed, the control limits will be updated to reflect the method performance. (LCSD 320-707539/3-A)

Method 537 (modified): The concentration of one or more analytes associated with the following sample exceeded the instrument calibration range: KHFTA-MW7 (320-104763-6). These analytes have been qualified with an 'E' flag; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified): The closing continuing calibration verification (CCV) standard (320-710353/18) failed to meet acceptance limits for several analytes. The associated samples were re-analyzed following a successful CCV resulting in another failure of the closing CCV, indicating that the sample matrix is adversely affecting the instrument.

Method ELLE SOP: Reporting limits were raised for the following samples due to interference from the sample matrix. KHFTA-MW1

Case Narrative

Client: Hawaii Department of Health
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Laboratory: Eurofins Sacramento (Continued)

(320-104763-1), KHFTA-MW2 (320-104763-2), KHFTA-MW3 (320-104763-3), KHFTA-MW4 (320-104763-4), KHFTA-MW5 (320-104763-5), KHFTA-MW7 (320-104763-6), & KHFTA-MW9 (320-104763-8).

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

Organic Prep

Method TOP Post Prep: The following samples in preparation batch 320-707539 were yellow in color following extraction. KHFTA-MW1 (320-104763-1), KHFTA-MW5 (320-104763-5), KHFTA-MW7 (320-104763-6), KHFTA-MW9 (320-104763-8) and KHFTA-MW11 (320-104763-9)

Method TOP Pre and Post Prep: The following samples were re-prepared outside of preparation holding time due to high analyte concentrations and/or incomplete oxidation for Pre and/or Post TOP analyses: KHFTA-MW1 (320-104763-1), KHFTA-MW2 (320-104763-2), KHFTA-MW3 (320-104763-3), KHFTA-MW4 (320-104763-4), KHFTA-MW5 (320-104763-5) and KHFTA-MW7 (320-104763-6) and KHFTA-MW9 (320-104763-8). Samples were prepared at reduced volume and reporting limits (RLs) have been adjusted proportionately. Preparation batches 320-709747 and 709748.

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



Detection Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW1

Lab Sample ID: 320-104763-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA) - RE	54000	H	25000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA) - RE	160000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA) - RE	220000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	29000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA) - RE	23000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	23000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	27000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	180000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS) - RE	15000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	560000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	930000	H	25000		ng/L	20		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA) - RE	20000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	110		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluoro-4-methoxybutanoic acid (PFMBA)	200		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	230000	H	25000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	420000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA) - RE	360000	H**	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	39000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA) - RE	24000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	26000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	28000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	170000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS) - RE	16000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	600000	H	10000		ng/L	20		537 (modified)	Post-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	34000	H	25000		ng/L	20		537 (modified)	Post-Treatment
Adsorbable Organic Fluorine (AOF)	2600		200		ug/L	1		ELLE SOP	Total/NA

Client Sample ID: KHFTA-MW2

Lab Sample ID: 320-104763-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA) - RE	77000	H	25000		ng/L	20		537 (modified)	Pre-Treatment

This Detection Summary does not include radiochemical test results.

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Detection Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW2 (Continued)

Lab Sample ID: 320-104763-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA) - RE	200000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA) - RE	300000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	34000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA) - RE	27000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	45000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	50000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	270000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS) - RE	13000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	630000	H	10000		ng/L	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	610000	H	25000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	380		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluoro-4-methoxybutanoic acid (PFMBA)	500		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	210000	H	25000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	370000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA) - RE	390000	H**	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	39000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA) - RE	28000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	51000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	56000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	260000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS) - RE	14000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	600000	H	10000		ng/L	20		537 (modified)	Post-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	35000	H	25000		ng/L	20		537 (modified)	Post-Treatment
Adsorbable Organic Fluorine (AOF)	2400		200		ug/L	1		ELLE SOP	Total/NA

Client Sample ID: KHFTA-MW3

Lab Sample ID: 320-104763-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA) - RE	36000	H	5000		ng/L	10		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA) - RE	43000	H	5000		ng/L	10		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	8500	H	5000		ng/L	10		537 (modified)	Pre-Treatment

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Detection Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW3 (Continued)

Lab Sample ID: 320-104763-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA) - RE	7300	H	5000		ng/L	10		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	5600	H	5000		ng/L	10		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	6500	H	5000		ng/L	10		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	48000	H	5000		ng/L	10		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	340000	H	5000		ng/L	10		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	260000	H	13000		ng/L	10		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS) - RE	24000	H	5000		ng/L	10		537 (modified)	Pre-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	150		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluoro-4-methoxybutanoic acid (PFMBA)	200		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	52000	H	25000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	96000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA) - RE	130000	H **	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	16000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	43000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	320000	H	10000		ng/L	20		537 (modified)	Post-Treatment
Adsorbable Organic Fluorine (AOF)	790		40		ug/L	1		ELLE SOP	Total/NA

Client Sample ID: KHFTA-MW4

Lab Sample ID: 320-104763-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA) - RE	15000	H	5000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA) - RE	52000	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA) - RE	55000	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	9600	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA) - RE	6500	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	6700	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	8000	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	46000	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS) - RE	3700	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	120000	H	2000		ng/L	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS) - RE	2100	H	2000		ng/L	20		537 (modified)	Pre-Treatment

This Detection Summary does not include radiochemical test results.

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Detection Summary

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW4 (Continued)

Lab Sample ID: 320-104763-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	230000	H	5000		ng/L	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS) - RE	4800	H	2000		ng/L	20		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA) - RE	2300	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	28		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluoro-4-methoxybutanoic acid (PFMBA)	32		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	55000	H	5000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	120000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA) - RE	110000	H**	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	13000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA) - RE	6200	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	7400	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	8600	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	40000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS) - RE	3200	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	110000	H	2000		ng/L	20		537 (modified)	Post-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	11000	H	5000		ng/L	20		537 (modified)	Post-Treatment
Adsorbable Organic Fluorine (AOF)	610		40		ug/L	1		ELLE SOP	Total/NA

Client Sample ID: KHFTA-MW5

Lab Sample ID: 320-104763-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA) - RE	12000	H	5000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA) - RE	54000	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA) - RE	46000	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	8800	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA) - RE	5200	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	3100	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	3800	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	30000	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS) - RE	2500	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	110000	H	2000		ng/L	20		537 (modified)	Pre-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Detection Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW5 (Continued)

Lab Sample ID: 320-104763-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	230000	H	5000		ng/L	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS) - RE	2400	H	2000		ng/L	20		537 (modified)	Pre-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	17		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluoro-4-methoxybutanoic acid (PFMBA)	19		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	26000	H	5000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	57000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA) - RE	65000	H *	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	12000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA) - RE	4000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	4100	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	4400	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	23000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	71000	H	2000		ng/L	20		537 (modified)	Post-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	160000	H	5000		ng/L	20		537 (modified)	Post-Treatment
Adsorbable Organic Fluorine (AOF)	580		40		ug/L	1		ELLE SOP	Total/NA

Client Sample ID: KHFTA-MW7

Lab Sample ID: 320-104763-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	120		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorodecanoic acid (PFDA)	9.7		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorononanesulfonic acid (PFNS)	19		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonamide (FOSA)	34		5.0		ng/L	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	24		5.0		ng/L	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	130		5.0		ng/L	1		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	44		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	7.1		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluoro-4-methoxybutanoic acid (PFMBA)	8.6		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorobutanoic acid (PFBA) - DL	3900		1300		ng/L	100		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA) - DL	11000		500		ng/L	100		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA) - DL	16000		500		ng/L	100		537 (modified)	Pre-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Detection Summary

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW7 (Continued)

Lab Sample ID: 320-104763-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA) - DL	3500		500		ng/L	100		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA) - DL	3600		500		ng/L	100		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS) - DL	4700		500		ng/L	100		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS) - DL	5800		500		ng/L	100		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS) - DL	40000		500		ng/L	100		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS) - DL	2200		500		ng/L	100		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	98000	E	500		ng/L	100		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - DL	11000		1300		ng/L	100		537 (modified)	Pre-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	5.6		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluoro-4-methoxybutanoic acid (PFMBA)	9.2		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	8900	H	5000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	14000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA) - RE	25000	H**	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA) - RE	2900	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA) - RE	3100	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS) - RE	5700	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	6100	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	40000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	69000	H	2000		ng/L	20		537 (modified)	Post-Treatment
Adsorbable Organic Fluorine (AOF)	190		40		ug/L	1		ELLE SOP	Total/NA

Client Sample ID: KHFTA-MW8

Lab Sample ID: 320-104763-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	30		13		ng/L	1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	46		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	37		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	12		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	5.6		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	6.9		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	9.6		5.0		ng/L	1		537 (modified)	Pre-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Detection Summary

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW8 (Continued)

Lab Sample ID: 320-104763-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	65		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS)	71		5.0		ng/L	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	24		13		ng/L	1		537 (modified)	Pre-Treatment
Perfluorobutanoic acid (PFBA)	43		13		ng/L	1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA)	50	B **	5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA)	47	**	5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	11	**	5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA)	5.4		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	6.5		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS)	9.2		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	62		5.0		ng/L	1		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS)	76		5.0		ng/L	1		537 (modified)	Post-Treatment

Client Sample ID: KHFTA-MW9

Lab Sample ID: 320-104763-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	920		13		ng/L	1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	250		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	120		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorotridecanoic acid (PFTTrDA)	5.0		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	42		5.0		ng/L	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS)	840		5.0		ng/L	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	560		13		ng/L	1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA) - DL	2300		50		ng/L	10		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA) - DL	3800		50		ng/L	10		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS) - DL	2700		50		ng/L	10		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS) - DL	1700		50		ng/L	10		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS) - DL	3100		50		ng/L	10		537 (modified)	Pre-Treatment
Perfluorobutanoic acid (PFBA) - RE	1400	H	1300		ng/L	1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	2200	H	500		ng/L	1		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA) - RE	3400	H **	500		ng/L	1		537 (modified)	Post-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Detection Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW9 (Continued)

Lab Sample ID: 320-104763-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS) - RE	2100	H	500		ng/L	1			537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS) - RE	1400	H	500		ng/L	1			537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS) - RE	3200	H	500		ng/L	1			537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - RE	1700	H	500		ng/L	1			537 (modified)	Post-Treatment
Adsorbable Organic Fluorine (AOF)	18		10		ug/L	1			ELLE SOP	Total/NA

Client Sample ID: KHFTA-MW11

Lab Sample ID: 320-104763-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	33		13		ng/L	1			537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	73		5.0		ng/L	1			537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	130		5.0		ng/L	1			537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	16		5.0		ng/L	1			537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	16		5.0		ng/L	1			537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	92		5.0		ng/L	1			537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	69		5.0		ng/L	1			537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS)	230		5.0		ng/L	1			537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS)	150		5.0		ng/L	1			537 (modified)	Pre-Treatment
Perfluorobutanoic acid (PFBA)	25		13		ng/L	1			537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA)	59	*+ B	5.0		ng/L	1			537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA)	110	*+	5.0		ng/L	1			537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	15	*+	5.0		ng/L	1			537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA)	14		5.0		ng/L	1			537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	68		5.0		ng/L	1			537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS)	53		5.0		ng/L	1			537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	200		5.0		ng/L	1			537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	5.4		5.0		ng/L	1			537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS)	170		5.0		ng/L	1			537 (modified)	Post-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	15		13		ng/L	1			537 (modified)	Post-Treatment
Adsorbable Organic Fluorine (AOF)	2.1		2.0		ug/L	1			ELLE SOP	Total/NA

Client Sample ID: KHFTA-EB#1

Lab Sample ID: 320-104763-10

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW1

Lab Sample ID: 320-104763-1

Date Collected: 09/06/23 12:45

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:03	100
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:03	100
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1000		ng/L		09/19/23 23:09	10/03/23 21:03	100
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:03	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFHxDA	89		25 - 150				09/19/23 23:09	10/03/23 21:03	100
d-N-MeFOSA-M	79		25 - 150				09/19/23 23:09	10/03/23 21:03	100
d-N-EtFOSA-M	63		25 - 150				09/19/23 23:09	10/03/23 21:03	100
d7-N-MeFOSE-M	161	*5+	25 - 150				09/19/23 23:09	10/03/23 21:03	100
d9-N-EtFOSE-M	98		25 - 150				09/19/23 23:09	10/03/23 21:03	100

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	54000	H	25000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluoropentanoic acid (PFPeA)	160000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorohexanoic acid (PFHxA)	220000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluoroheptanoic acid (PFHpA)	29000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorooctanoic acid (PFOA)	23000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorononanoic acid (PFNA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorodecanoic acid (PFDA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluoroundecanoic acid (PFUnA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorododecanoic acid (PFDoA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorotridecanoic acid (PFTTrDA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorotetradecanoic acid (PFTeA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorobutanesulfonic acid (PFBS)	23000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluoropentanesulfonic acid (PFPeS)	27000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorohexanesulfonic acid (PFHxS)	180000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluoroheptanesulfonic acid (PFHpS)	15000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorooctanesulfonic acid (PFOS)	560000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorononanesulfonic acid (PFNS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluorooctanesulfonamide (FOSA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	25000		ng/L		09/28/23 21:33	10/03/23 19:56	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	25000		ng/L		09/28/23 21:33	10/03/23 19:56	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	930000	H	25000		ng/L		09/28/23 21:33	10/03/23 19:56	20

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW1

Lab Sample ID: 320-104763-1

Date Collected: 09/06/23 12:45

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	20000		ng/L		09/28/23 21:33	10/03/23 19:56	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H *	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	20000	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
6:2 FTUCA	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:56	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	110		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C4 PFBA	104		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C5 PFPeA	105		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C2 PFHxA	96		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C4 PFHpA	111		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C4 PFOA	102		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C5 PFNA	110		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C2 PFDA	114		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C2 PFUnA	106		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C2 PFDoA	99		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C2 PFTeDA	103		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C2 PFHxDA	87		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C3 PFBS	101		25 - 150	09/28/23 21:33	10/03/23 19:56	20
18O2 PFHxS	98		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C4 PFOS	93		25 - 150	09/28/23 21:33	10/03/23 19:56	20
d5-NEtFOSAA	118		25 - 150	09/28/23 21:33	10/03/23 19:56	20
d3-NMeFOSAA	110		25 - 150	09/28/23 21:33	10/03/23 19:56	20
M2-4:2 FTS	88		25 - 150	09/28/23 21:33	10/03/23 19:56	20
M2-6:2 FTS	126		25 - 150	09/28/23 21:33	10/03/23 19:56	20
M2-8:2 FTS	106		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C3 HFPO-DA	98		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C-6:2 FTCA	73		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C-8:2 FTCA	98		25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C2 10:2 FTS	155	*5+	25 - 150	09/28/23 21:33	10/03/23 19:56	20
13C-6:2 FTUCA	131		25 - 150	09/28/23 21:33	10/03/23 19:56	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW1

Lab Sample ID: 320-104763-1

Date Collected: 09/06/23 12:45

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	110		5.0		ng/L		09/19/23 21:34	09/22/23 22:23	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	200		5.0		ng/L		09/19/23 21:34	09/22/23 22:23	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*	5.0		ng/L		09/19/23 21:34	09/22/23 22:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C5 PFPeA	65		25 - 150				09/19/23 21:34	09/22/23 22:23	1
13C2 PFHxA	173	*5+	25 - 150				09/19/23 21:34	09/22/23 22:23	1
M2-4:2 FTS	107	*5+	0 - 10				09/19/23 21:34	09/22/23 22:23	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	230000	H	25000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluoropentanoic acid (PFPeA)	420000	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorohexanoic acid (PFHxA)	360000	H **	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluoroheptanoic acid (PFHpA)	39000	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorooctanoic acid (PFOA)	24000	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorononanoic acid (PFNA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorodecanoic acid (PFDA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluoroundecanoic acid (PFUnA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorododecanoic acid (PFDoA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorotridecanoic acid (PFTrDA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorotetradecanoic acid (PFTeA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorobutanesulfonic acid (PFBS)	26000	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluoropentanesulfonic acid (PFPeS)	28000	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorohexanesulfonic acid (PFHxS)	170000	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluoroheptanesulfonic acid (PFHpS)	16000	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorooctanesulfonic acid (PFOS)	600000	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorononanesulfonic acid (PFNS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluorooctanesulfonamide (FOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	25000		ng/L		09/28/23 21:59	10/08/23 16:50	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	25000		ng/L		09/28/23 21:59	10/08/23 16:50	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	34000	H	25000		ng/L		09/28/23 21:59	10/08/23 16:50	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW1

Lab Sample ID: 320-104763-1

Date Collected: 09/06/23 12:45

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	20000		ng/L		09/28/23 21:59	10/08/23 16:50	20
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	20000		ng/L		09/28/23 21:59	10/08/23 16:50	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
6:2 FTUCA	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 16:50	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	103		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C4 PFBA	86		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C5 PFPeA	99		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C2 PFHxA	98		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C4 PFHpA	94		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C4 PFOA	93		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C5 PFNA	83		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C2 PFDA	88		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C2 PFUnA	96		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C2 PFDoA	82		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C2 PFTeDA	113		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C2 PFHxDA	75		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C3 PFBS	88		25 - 150	09/28/23 21:59	10/08/23 16:50	20
18O2 PFHxS	91		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C4 PFOS	85		25 - 150	09/28/23 21:59	10/08/23 16:50	20
d5-NEtFOSAA	101		25 - 150	09/28/23 21:59	10/08/23 16:50	20
d3-NMeFOSAA	95		25 - 150	09/28/23 21:59	10/08/23 16:50	20
M2-4:2 FTS	0		0 - 10	09/28/23 21:59	10/08/23 16:50	20
M2-6:2 FTS	112		25 - 150	09/28/23 21:59	10/08/23 16:50	20
M2-8:2 FTS	78		25 - 150	09/28/23 21:59	10/08/23 16:50	20
d-N-MeFOSA-M	26		25 - 150	09/28/23 21:59	10/08/23 16:50	20
d-N-EtFOSA-M	15	*5-	25 - 150	09/28/23 21:59	10/08/23 16:50	20
d7-N-MeFOSE-M	41		25 - 150	09/28/23 21:59	10/08/23 16:50	20
d9-N-EtFOSE-M	30		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C3 HFPO-DA	98		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C-6:2 FTCA	92		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C-8:2 FTCA	100		25 - 150	09/28/23 21:59	10/08/23 16:50	20
13C2 10:2 FTS	105		25 - 150	09/28/23 21:59	10/08/23 16:50	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW1

Lab Sample ID: 320-104763-1

Date Collected: 09/06/23 12:45

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-6:2 FTUCA	128		25 - 150	09/28/23 21:59	10/08/23 16:50	20

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	2600		200		ug/L		10/05/23 13:12	10/06/23 12:53	1

Client Sample ID: KHFTA-MW2

Lab Sample ID: 320-104763-2

Date Collected: 09/06/23 13:00

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:14	100
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:14	100
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1000		ng/L		09/19/23 23:09	10/03/23 21:14	100
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:14	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxDA	76		25 - 150	09/19/23 23:09	10/03/23 21:14	100
d-N-MeFOSA-M	28		25 - 150	09/19/23 23:09	10/03/23 21:14	100
d-N-EtFOSA-M	85		25 - 150	09/19/23 23:09	10/03/23 21:14	100
d7-N-MeFOSE-M	112		25 - 150	09/19/23 23:09	10/03/23 21:14	100
d9-N-EtFOSE-M	105		25 - 150	09/19/23 23:09	10/03/23 21:14	100

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	77000	H	25000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluoropentanoic acid (PFPeA)	200000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorohexanoic acid (PFHxA)	300000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluoroheptanoic acid (PFHpA)	34000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorooctanoic acid (PFOA)	27000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorononanoic acid (PFNA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorodecanoic acid (PFDA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluoroundecanoic acid (PFUnA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorododecanoic acid (PFDoA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorotridecanoic acid (PFTriDA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorotetradecanoic acid (PFTeA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorobutanesulfonic acid (PFBS)	45000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluoropentanesulfonic acid (PFPeS)	50000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorohexanesulfonic acid (PFHxS)	270000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluoroheptanesulfonic acid (PFHpS)	13000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorooctanesulfonic acid (PFOS)	630000	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorononanesulfonic acid (PFNS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW2

Lab Sample ID: 320-104763-2

Date Collected: 09/06/23 13:00

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanesulfonic acid (PFDoS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluorooctanesulfonamide (FOSA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	25000		ng/L		09/28/23 21:33	10/03/23 20:07	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEFOSAA)	ND	H	25000		ng/L		09/28/23 21:33	10/03/23 20:07	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	610000	H	25000		ng/L		09/28/23 21:33	10/03/23 20:07	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	20000		ng/L		09/28/23 21:33	10/03/23 20:07	20
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H *	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
6:2 FTUCA	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 20:07	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	113		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C4 PFBA	100		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C5 PFPeA	102		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C2 PFHxA	98		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C4 PFHpA	112		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C4 PFOA	106		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C5 PFNA	104		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C2 PFDA	111		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C2 PFUnA	110		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C2 PFDoA	98		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C2 PFTeDA	110		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C2 PFHxDA	93		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C3 PFBS	99		25 - 150	09/28/23 21:33	10/03/23 20:07	20
18O2 PFHxS	104		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C4 PFOS	103		25 - 150	09/28/23 21:33	10/03/23 20:07	20

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW2

Lab Sample ID: 320-104763-2

Date Collected: 09/06/23 13:00

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	112		25 - 150	09/28/23 21:33	10/03/23 20:07	20
d3-NMeFOSAA	89		25 - 150	09/28/23 21:33	10/03/23 20:07	20
M2-4:2 FTS	86		25 - 150	09/28/23 21:33	10/03/23 20:07	20
M2-6:2 FTS	139		25 - 150	09/28/23 21:33	10/03/23 20:07	20
M2-8:2 FTS	119		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C3 HFPO-DA	99		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C-6:2 FTCA	87		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C-8:2 FTCA	92		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C2 10:2 FTS	138		25 - 150	09/28/23 21:33	10/03/23 20:07	20
13C-6:2 FTUCA	128		25 - 150	09/28/23 21:33	10/03/23 20:07	20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	380		5.0		ng/L		09/19/23 21:34	09/22/23 22:34	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	500		5.0		ng/L		09/19/23 21:34	09/22/23 22:34	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*	5.0		ng/L		09/19/23 21:34	09/22/23 22:34	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	51		25 - 150	09/19/23 21:34	09/22/23 22:34	1
13C2 PFHxA	174	*5+	25 - 150	09/19/23 21:34	09/22/23 22:34	1
M2-4:2 FTS	55	*5+	0 - 10	09/19/23 21:34	09/22/23 22:34	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	210000	H	25000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluoropentanoic acid (PFPeA)	370000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorohexanoic acid (PFHxA)	390000	H **	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluoroheptanoic acid (PFHpA)	39000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorooctanoic acid (PFOA)	28000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorononanoic acid (PFNA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorodecanoic acid (PFDA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluoroundecanoic acid (PFUnA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorododecanoic acid (PFDoA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorotridecanoic acid (PFTrDA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorotetradecanoic acid (PFTeA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorobutanesulfonic acid (PFBS)	51000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluoropentanesulfonic acid (PFPeS)	56000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorohexanesulfonic acid (PFHxS)	260000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluoroheptanesulfonic acid (PFHpS)	14000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorooctanesulfonic acid (PFOS)	600000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorononanesulfonic acid (PFNS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluorooctanesulfonamide (FOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW2

Lab Sample ID: 320-104763-2

Date Collected: 09/06/23 13:00

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	25000		ng/L		09/28/23 21:59	10/08/23 17:01	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	25000		ng/L		09/28/23 21:59	10/08/23 17:01	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	35000	H	25000		ng/L		09/28/23 21:59	10/08/23 17:01	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	20000		ng/L		09/28/23 21:59	10/08/23 17:01	20
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	20000		ng/L		09/28/23 21:59	10/08/23 17:01	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
6:2 FTUCA	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:01	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	102		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C4 PFBA	83		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C5 PFPeA	89		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C2 PFHxA	91		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C4 PFHpA	89		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C4 PFOA	87		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C5 PFNA	85		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C2 PFDA	84		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C2 PFUnA	88		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C2 PFDoA	84		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C2 PFTeDA	112		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C2 PFHxDA	72		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C3 PFBS	80		25 - 150	09/28/23 21:59	10/08/23 17:01	20
18O2 PFHxS	94		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C4 PFOS	83		25 - 150	09/28/23 21:59	10/08/23 17:01	20
d5-NEtFOSAA	95		25 - 150	09/28/23 21:59	10/08/23 17:01	20

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW2

Lab Sample ID: 320-104763-2

Date Collected: 09/06/23 13:00

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	91		25 - 150	09/28/23 21:59	10/08/23 17:01	20
M2-4:2 FTS	0		0 - 10	09/28/23 21:59	10/08/23 17:01	20
M2-6:2 FTS	99		25 - 150	09/28/23 21:59	10/08/23 17:01	20
M2-8:2 FTS	78		25 - 150	09/28/23 21:59	10/08/23 17:01	20
d-N-MeFOSA-M	32		25 - 150	09/28/23 21:59	10/08/23 17:01	20
d-N-EtFOSA-M	27		25 - 150	09/28/23 21:59	10/08/23 17:01	20
d7-N-MeFOSE-M	42		25 - 150	09/28/23 21:59	10/08/23 17:01	20
d9-N-EtFOSE-M	40		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C3 HFPO-DA	67		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C-6:2 FTCA	76		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C-8:2 FTCA	76		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C2 10:2 FTS	62		25 - 150	09/28/23 21:59	10/08/23 17:01	20
13C-6:2 FTUCA	124		25 - 150	09/28/23 21:59	10/08/23 17:01	20

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	2400		200		ug/L		10/05/23 13:12	10/06/23 13:59	1

Client Sample ID: KHFTA-MW3

Lab Sample ID: 320-104763-3

Date Collected: 09/06/23 11:53

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:26	100
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:26	100
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1000		ng/L		09/19/23 23:09	10/03/23 21:26	100
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:26	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxDA	71		25 - 150	09/19/23 23:09	10/03/23 21:26	100
d-N-MeFOSA-M	98		25 - 150	09/19/23 23:09	10/03/23 21:26	100
d-N-EtFOSA-M	63		25 - 150	09/19/23 23:09	10/03/23 21:26	100
d7-N-MeFOSE-M	55		25 - 150	09/19/23 23:09	10/03/23 21:26	100
d9-N-EtFOSE-M	74		25 - 150	09/19/23 23:09	10/03/23 21:26	100

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND	H	13000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluoropentanoic acid (PFPeA)	36000	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorohexanoic acid (PFHxA)	43000	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluoroheptanoic acid (PFHpA)	8500	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorooctanoic acid (PFOA)	7300	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorononanoic acid (PFNA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorodecanoic acid (PFDA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluoroundecanoic acid (PFUnA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorododecanoic acid (PFDoA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW3

Lab Sample ID: 320-104763-3

Date Collected: 09/06/23 11:53

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotridecanoic acid (PFTrDA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorotetradecanoic acid (PFTeA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorobutanesulfonic acid (PFBS)	5600	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluoropentanesulfonic acid (PFPeS)	6500	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorohexanesulfonic acid (PFHxS)	48000	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorooctanesulfonic acid (PFOS)	340000	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorononanesulfonic acid (PFNS)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorodecanesulfonic acid (PFDS)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorododecanesulfonic acid (PFDoS)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluorooctanesulfonamide (FOSA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	13000		ng/L		09/28/23 21:33	10/03/23 19:34	10
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	13000		ng/L		09/28/23 21:33	10/03/23 19:34	10
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	260000	H	13000		ng/L		09/28/23 21:33	10/03/23 19:34	10
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	24000	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	10000		ng/L		09/28/23 21:33	10/03/23 19:34	10
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H *	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
6:2 FTUCA	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 19:34	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	119		25 - 150				09/28/23 21:33	10/03/23 19:34	10
13C4 PFBA	104		25 - 150				09/28/23 21:33	10/03/23 19:34	10

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW3

Lab Sample ID: 320-104763-3

Date Collected: 09/06/23 11:53

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	98		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C2 PFHxA	96		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C4 PFHpA	104		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C4 PFOA	92		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C5 PFNA	104		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C2 PFDA	108		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C2 PFUnA	97		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C2 PFDoA	96		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C2 PFTeDA	92		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C2 PFHxDA	82		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C3 PFBS	99		25 - 150	09/28/23 21:33	10/03/23 19:34	10
18O2 PFHxS	96		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C4 PFOS	98		25 - 150	09/28/23 21:33	10/03/23 19:34	10
d5-NEtFOSAA	127		25 - 150	09/28/23 21:33	10/03/23 19:34	10
d3-NMeFOSAA	92		25 - 150	09/28/23 21:33	10/03/23 19:34	10
M2-4:2 FTS	90		25 - 150	09/28/23 21:33	10/03/23 19:34	10
M2-6:2 FTS	99		25 - 150	09/28/23 21:33	10/03/23 19:34	10
M2-8:2 FTS	114		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C3 HFPO-DA	99		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C-6:2 FTCA	89		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C-8:2 FTCA	92		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C2 10:2 FTS	125		25 - 150	09/28/23 21:33	10/03/23 19:34	10
13C-6:2 FTUCA	123		25 - 150	09/28/23 21:33	10/03/23 19:34	10

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	150		5.0		ng/L		09/19/23 21:34	09/22/23 22:45	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	200		5.0		ng/L		09/19/23 21:34	09/22/23 22:45	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*	5.0		ng/L		09/19/23 21:34	09/22/23 22:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	38		25 - 150	09/19/23 21:34	09/22/23 22:45	1
13C2 PFHxA	85		25 - 150	09/19/23 21:34	09/22/23 22:45	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:34	09/22/23 22:45	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	52000	H	25000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluoropentanoic acid (PFPeA)	96000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorohexanoic acid (PFHxA)	130000	H **	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluoroheptanoic acid (PFHpA)	16000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorooctanoic acid (PFOA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorononanoic acid (PFNA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorodecanoic acid (PFDA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluoroundecanoic acid (PFUnA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorododecanoic acid (PFDoA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorotridecanoic acid (PFTrDA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorotetradecanoic acid (PFTeA)	ND	H **	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW3

Lab Sample ID: 320-104763-3

Date Collected: 09/06/23 11:53

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluoropentanesulfonic acid (PFPeS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorohexanesulfonic acid (PFHxS)	43000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorooctanesulfonic acid (PFOS)	320000	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorononanesulfonic acid (PFNS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluorooctanesulfonamide (FOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	25000		ng/L		09/28/23 21:59	10/08/23 17:13	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	25000		ng/L		09/28/23 21:59	10/08/23 17:13	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	25000		ng/L		09/28/23 21:59	10/08/23 17:13	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	20000		ng/L		09/28/23 21:59	10/08/23 17:13	20
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	20000		ng/L		09/28/23 21:59	10/08/23 17:13	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
6:2 FTUCA	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	10000		ng/L		09/28/23 21:59	10/08/23 17:13	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	100		25 - 150				09/28/23 21:59	10/08/23 17:13	20
13C4 PFBA	93		25 - 150				09/28/23 21:59	10/08/23 17:13	20
13C5 PFPeA	98		25 - 150				09/28/23 21:59	10/08/23 17:13	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW3

Lab Sample ID: 320-104763-3

Date Collected: 09/06/23 11:53

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxA	95		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C4 PFHpA	93		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C4 PFOA	97		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C5 PFNA	91		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C2 PFDA	94		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C2 PFUnA	92		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C2 PFDoA	84		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C2 PFTeDA	115		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C2 PFHxDA	83		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C3 PFBS	85		25 - 150	09/28/23 21:59	10/08/23 17:13	20
18O2 PFHxS	101		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C4 PFOS	102		25 - 150	09/28/23 21:59	10/08/23 17:13	20
d5-NEtFOSAA	97		25 - 150	09/28/23 21:59	10/08/23 17:13	20
d3-NMeFOSAA	93		25 - 150	09/28/23 21:59	10/08/23 17:13	20
M2-4:2 FTS	0		0 - 10	09/28/23 21:59	10/08/23 17:13	20
M2-6:2 FTS	97		25 - 150	09/28/23 21:59	10/08/23 17:13	20
M2-8:2 FTS	102		25 - 150	09/28/23 21:59	10/08/23 17:13	20
d-N-MeFOSA-M	42		25 - 150	09/28/23 21:59	10/08/23 17:13	20
d-N-EtFOSA-M	37		25 - 150	09/28/23 21:59	10/08/23 17:13	20
d7-N-MeFOSE-M	75		25 - 150	09/28/23 21:59	10/08/23 17:13	20
d9-N-EtFOSE-M	62		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C3 HFPO-DA	110		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C-6:2 FTCA	69		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C-8:2 FTCA	70		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C2 10:2 FTS	95		25 - 150	09/28/23 21:59	10/08/23 17:13	20
13C-6:2 FTUCA	118		25 - 150	09/28/23 21:59	10/08/23 17:13	20

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	790		40		ug/L		10/02/23 10:31	10/03/23 22:58	1

Client Sample ID: KHFTA-MW4

Lab Sample ID: 320-104763-4

Date Collected: 09/06/23 12:20

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:37	100
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:37	100
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1000		ng/L		09/19/23 23:09	10/03/23 21:37	100
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:37	100

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFHxDA	97		25 - 150	09/19/23 23:09	10/03/23 21:37	100
d-N-MeFOSA-M	73		25 - 150	09/19/23 23:09	10/03/23 21:37	100
d-N-EtFOSA-M	88		25 - 150	09/19/23 23:09	10/03/23 21:37	100
d7-N-MeFOSE-M	125		25 - 150	09/19/23 23:09	10/03/23 21:37	100

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW4

Lab Sample ID: 320-104763-4

Date Collected: 09/06/23 12:20

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d9-N-EtFOSE-M	112		25 - 150	09/19/23 23:09	10/03/23 21:37	100

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	15000	H	5000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluoropentanoic acid (PFPeA)	52000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorohexanoic acid (PFHxA)	55000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluoroheptanoic acid (PFHpA)	9600	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorooctanoic acid (PFOA)	6500	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorononanoic acid (PFNA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorodecanoic acid (PFDA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluoroundecanoic acid (PFUnA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorododecanoic acid (PFDoA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorotridecanoic acid (PFTTrDA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorotetradecanoic acid (PFTeA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorobutanesulfonic acid (PFBS)	6700	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluoropentanesulfonic acid (PFPeS)	8000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorohexanesulfonic acid (PFHxS)	46000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluoroheptanesulfonic acid (PFHpS)	3700	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorooctanesulfonic acid (PFOS)	120000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorononanesulfonic acid (PFNS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluorooctanesulfonamide (FOSA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 20:18	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 20:18	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2100	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	230000	H	5000		ng/L		09/28/23 21:33	10/03/23 20:18	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	4800	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	4000		ng/L		09/28/23 21:33	10/03/23 20:18	20
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H *	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	2300	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW4

Lab Sample ID: 320-104763-4

Date Collected: 09/06/23 12:20

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
6:2 FTUCA	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:18	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	126		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C4 PFBA	103		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C5 PFPeA	98		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C2 PFHxA	111		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C4 PFHpA	111		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C4 PFOA	106		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C5 PFNA	111		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C2 PFDA	132		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C2 PFUnA	105		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C2 PFDoA	104		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C2 PFTeDA	98		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C2 PFHxDA	97		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C3 PFBS	103		25 - 150	09/28/23 21:33	10/03/23 20:18	20
18O2 PFHxS	115		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C4 PFOS	96		25 - 150	09/28/23 21:33	10/03/23 20:18	20
d5-NEtFOSAA	119		25 - 150	09/28/23 21:33	10/03/23 20:18	20
d3-NMeFOSAA	115		25 - 150	09/28/23 21:33	10/03/23 20:18	20
M2-4:2 FTS	98		25 - 150	09/28/23 21:33	10/03/23 20:18	20
M2-6:2 FTS	156	*5+	25 - 150	09/28/23 21:33	10/03/23 20:18	20
M2-8:2 FTS	124		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C3 HFPO-DA	91		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C-6:2 FTCA	67		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C-8:2 FTCA	115		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C2 10:2 FTS	133		25 - 150	09/28/23 21:33	10/03/23 20:18	20
13C-6:2 FTUCA	134		25 - 150	09/28/23 21:33	10/03/23 20:18	20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	28		5.0		ng/L		09/19/23 21:34	09/22/23 22:56	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	32		5.0		ng/L		09/19/23 21:34	09/22/23 22:56	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*-	5.0		ng/L		09/19/23 21:34	09/22/23 22:56	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	84		25 - 150	09/19/23 21:34	09/22/23 22:56	1
13C2 PFHxA	128		25 - 150	09/19/23 21:34	09/22/23 22:56	1
M2-4:2 FTS	101	*5+	0 - 10	09/19/23 21:34	09/22/23 22:56	1

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW4

Lab Sample ID: 320-104763-4

Date Collected: 09/06/23 12:20

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	55000	H	5000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluoropentanoic acid (PFPeA)	120000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorohexanoic acid (PFHxA)	110000	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluoroheptanoic acid (PFHpA)	13000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorooctanoic acid (PFOA)	6200	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorononanoic acid (PFNA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorodecanoic acid (PFDA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluoroundecanoic acid (PFUnA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorododecanoic acid (PFDoA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorotridecanoic acid (PFTrDA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorotetradecanoic acid (PFTeA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorobutanesulfonic acid (PFBS)	7400	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluoropentanesulfonic acid (PFPeS)	8600	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorohexanesulfonic acid (PFHxS)	40000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluoroheptanesulfonic acid (PFHpS)	3200	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorooctanesulfonic acid (PFOS)	110000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorononanesulfonic acid (PFNS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluorooctanesulfonamide (FOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	5000		ng/L		09/28/23 21:59	10/08/23 17:24	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	5000		ng/L		09/28/23 21:59	10/08/23 17:24	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	11000	H	5000		ng/L		09/28/23 21:59	10/08/23 17:24	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	4000		ng/L		09/28/23 21:59	10/08/23 17:24	20
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	4000		ng/L		09/28/23 21:59	10/08/23 17:24	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW4

Lab Sample ID: 320-104763-4

Date Collected: 09/06/23 12:20

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
6:2 FTUCA	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:24	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	98		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C4 PFBA	93		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C5 PFPeA	90		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C2 PFHxA	91		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C4 PFHpA	91		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C4 PFOA	95		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C5 PFNA	87		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C2 PFDA	99		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C2 PFUnA	95		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C2 PFDoA	84		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C2 PFTeDA	102		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C2 PFHxDA	89		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C3 PFBS	90		25 - 150	09/28/23 21:59	10/08/23 17:24	20
18O2 PFHxS	106		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C4 PFOS	87		25 - 150	09/28/23 21:59	10/08/23 17:24	20
d5-NEtFOSAA	101		25 - 150	09/28/23 21:59	10/08/23 17:24	20
d3-NMeFOSAA	103		25 - 150	09/28/23 21:59	10/08/23 17:24	20
M2-4:2 FTS	0		0 - 10	09/28/23 21:59	10/08/23 17:24	20
M2-6:2 FTS	101		25 - 150	09/28/23 21:59	10/08/23 17:24	20
M2-8:2 FTS	91		25 - 150	09/28/23 21:59	10/08/23 17:24	20
d-N-MeFOSA-M	56		25 - 150	09/28/23 21:59	10/08/23 17:24	20
d-N-EtFOSA-M	38		25 - 150	09/28/23 21:59	10/08/23 17:24	20
d7-N-MeFOSE-M	83		25 - 150	09/28/23 21:59	10/08/23 17:24	20
d9-N-EtFOSE-M	86		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C3 HFPO-DA	97		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C-6:2 FTCA	85		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C-8:2 FTCA	105		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C2 10:2 FTS	80		25 - 150	09/28/23 21:59	10/08/23 17:24	20
13C-6:2 FTUCA	130		25 - 150	09/28/23 21:59	10/08/23 17:24	20

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	610		40		ug/L		10/02/23 10:31	10/04/23 00:04	1

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW5

Lab Sample ID: 320-104763-5

Date Collected: 09/06/23 12:35

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:48	100
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:48	100
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1000		ng/L		09/19/23 23:09	10/03/23 21:48	100
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		500		ng/L		09/19/23 23:09	10/03/23 21:48	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFTeDA	101		25 - 150				09/19/23 23:09	10/03/23 21:48	100
d-N-MeFOSA-M	126		25 - 150				09/19/23 23:09	10/03/23 21:48	100
d-N-EtFOSA-M	84		25 - 150				09/19/23 23:09	10/03/23 21:48	100
d7-N-MeFOSE-M	100		25 - 150				09/19/23 23:09	10/03/23 21:48	100
d9-N-EtFOSE-M	117		25 - 150				09/19/23 23:09	10/03/23 21:48	100

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	12000	H	5000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluoropentanoic acid (PFPeA)	54000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorohexanoic acid (PFHxA)	46000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluoroheptanoic acid (PFHpA)	8800	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorooctanoic acid (PFOA)	5200	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorononanoic acid (PFNA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorodecanoic acid (PFDA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluoroundecanoic acid (PFUnA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorododecanoic acid (PFDoA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorotridecanoic acid (PFTTrDA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorotetradecanoic acid (PFTeA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorobutanesulfonic acid (PFBS)	3100	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluoropentanesulfonic acid (PFPeS)	3800	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorohexanesulfonic acid (PFHxS)	30000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluoroheptanesulfonic acid (PFHpS)	2500	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorooctanesulfonic acid (PFOS)	110000	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorononanesulfonic acid (PFNS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluorooctanesulfonamide (FOSA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 20:41	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	5000		ng/L		09/28/23 21:33	10/03/23 20:41	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	230000	H	5000		ng/L		09/28/23 21:33	10/03/23 20:41	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW5

Lab Sample ID: 320-104763-5

Date Collected: 09/06/23 12:35

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2400	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	4000		ng/L		09/28/23 21:33	10/03/23 20:41	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H *	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
6:2 FTUCA	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	2000		ng/L		09/28/23 21:33	10/03/23 20:41	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	126		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C4 PFBA	105		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C5 PFPeA	103		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C2 PFHxA	110		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C4 PFHpA	109		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C4 PFOA	99		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C5 PFNA	106		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C2 PFDA	112		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C2 PFUnA	105		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C2 PFDoA	109		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C2 PFTeDA	113		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C2 PFHxDA	98		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C3 PFBS	113		25 - 150	09/28/23 21:33	10/03/23 20:41	20
18O2 PFHxS	103		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C4 PFOS	102		25 - 150	09/28/23 21:33	10/03/23 20:41	20
d5-NEtFOSAA	108		25 - 150	09/28/23 21:33	10/03/23 20:41	20
d3-NMeFOSAA	119		25 - 150	09/28/23 21:33	10/03/23 20:41	20
M2-4:2 FTS	87		25 - 150	09/28/23 21:33	10/03/23 20:41	20
M2-6:2 FTS	166	*5+	25 - 150	09/28/23 21:33	10/03/23 20:41	20
M2-8:2 FTS	117		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C3 HFPO-DA	64		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C-6:2 FTCA	109		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C-8:2 FTCA	97		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C2 10:2 FTS	144		25 - 150	09/28/23 21:33	10/03/23 20:41	20
13C-6:2 FTUCA	129		25 - 150	09/28/23 21:33	10/03/23 20:41	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW5

Lab Sample ID: 320-104763-5

Date Collected: 09/06/23 12:35

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	17		5.0		ng/L		09/19/23 21:34	09/22/23 23:07	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	19		5.0		ng/L		09/19/23 21:34	09/22/23 23:07	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*	5.0		ng/L		09/19/23 21:34	09/22/23 23:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C5 PFPeA	83		25 - 150				09/19/23 21:34	09/22/23 23:07	1
13C2 PFHxA	128		25 - 150				09/19/23 21:34	09/22/23 23:07	1
M2-4:2 FTS	0		0 - 10				09/19/23 21:34	09/22/23 23:07	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	26000	H	5000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluoropentanoic acid (PFPeA)	57000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorohexanoic acid (PFHxA)	65000	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluoroheptanoic acid (PFHpA)	12000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorooctanoic acid (PFOA)	4000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorononanoic acid (PFNA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorodecanoic acid (PFDA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluoroundecanoic acid (PFUnA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorododecanoic acid (PFDoA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorotridecanoic acid (PFTrDA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorotetradecanoic acid (PFTeA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorobutanesulfonic acid (PFBS)	4100	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluoropentanesulfonic acid (PFPeS)	4400	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorohexanesulfonic acid (PFHxS)	23000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorooctanesulfonic acid (PFOS)	71000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorononanesulfonic acid (PFNS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluorooctanesulfonamide (FOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	5000		ng/L		09/28/23 21:59	10/08/23 17:35	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	5000		ng/L		09/28/23 21:59	10/08/23 17:35	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	160000	H	5000		ng/L		09/28/23 21:59	10/08/23 17:35	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW5

Lab Sample ID: 320-104763-5

Date Collected: 09/06/23 12:35

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	4000		ng/L		09/28/23 21:59	10/08/23 17:35	20
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	4000		ng/L		09/28/23 21:59	10/08/23 17:35	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
6:2 FTUCA	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:35	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	114		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C4 PFBA	98		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C5 PFPeA	104		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C2 PFHxA	103		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C4 PFHpA	104		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C4 PFOA	105		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C5 PFNA	103		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C2 PFDA	113		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C2 PFUnA	100		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C2 PFDoA	83		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C2 PFTeDA	133		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C2 PFHxDA	90		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C3 PFBS	106		25 - 150	09/28/23 21:59	10/08/23 17:35	20
18O2 PFHxS	116		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C4 PFOS	110		25 - 150	09/28/23 21:59	10/08/23 17:35	20
d5-NEtFOSAA	117		25 - 150	09/28/23 21:59	10/08/23 17:35	20
d3-NMeFOSAA	113		25 - 150	09/28/23 21:59	10/08/23 17:35	20
M2-4:2 FTS	75	*5+	0 - 10	09/28/23 21:59	10/08/23 17:35	20
M2-6:2 FTS	183	*5+	25 - 150	09/28/23 21:59	10/08/23 17:35	20
M2-8:2 FTS	112		25 - 150	09/28/23 21:59	10/08/23 17:35	20
d-N-MeFOSA-M	40		25 - 150	09/28/23 21:59	10/08/23 17:35	20
d-N-EtFOSA-M	33		25 - 150	09/28/23 21:59	10/08/23 17:35	20
d7-N-MeFOSE-M	52		25 - 150	09/28/23 21:59	10/08/23 17:35	20
d9-N-EtFOSE-M	46		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C3 HFPO-DA	86		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C-6:2 FTCA	90		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C-8:2 FTCA	86		25 - 150	09/28/23 21:59	10/08/23 17:35	20
13C2 10:2 FTS	116		25 - 150	09/28/23 21:59	10/08/23 17:35	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW5

Lab Sample ID: 320-104763-5

Date Collected: 09/06/23 12:35

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-6:2 FTUCA	132		25 - 150	09/28/23 21:59	10/08/23 17:35	20

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	580		40		ug/L		10/02/23 10:31	10/04/23 01:09	1

Client Sample ID: KHFTA-MW7

Lab Sample ID: 320-104763-6

Date Collected: 09/06/23 14:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	120		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluorodecanoic acid (PFDA)	9.7		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluorononanesulfonic acid (PFNS)	19		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluorooctanesulfonamide (FOSA)	34		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 20:20	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 20:20	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	24		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	130		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 23:09	09/22/23 20:20	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 23:09	09/22/23 20:20	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW7

Lab Sample ID: 320-104763-6

Date Collected: 09/06/23 14:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropentylpropanoic acid (5:3 FTCA)	44		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEASA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	7.1		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	8.6		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:20	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	163	*5+	25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C4 PFBA	103		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C5 PFPeA	94		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C2 PFHxA	93		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C4 PFHpA	70		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C4 PFOA	96		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C5 PFNA	52		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C2 PFDA	155	*5+	25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C2 PFUnA	144		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C2 PFDoA	145		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C2 PFTeDA	150		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C2 PFHxDA	122		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C3 PFBS	123		25 - 150	09/19/23 23:09	09/22/23 20:20	1
18O2 PFHxS	65		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C4 PFOS	36		25 - 150	09/19/23 23:09	09/22/23 20:20	1
d5-NEtFOSAA	143		25 - 150	09/19/23 23:09	09/22/23 20:20	1
d3-NMeFOSAA	144		25 - 150	09/19/23 23:09	09/22/23 20:20	1
M2-4:2 FTS	113		25 - 150	09/19/23 23:09	09/22/23 20:20	1
M2-8:2 FTS	152	*5+	25 - 150	09/19/23 23:09	09/22/23 20:20	1
d-N-MeFOSA-M	136		25 - 150	09/19/23 23:09	09/22/23 20:20	1
d-N-EtFOSA-M	127		25 - 150	09/19/23 23:09	09/22/23 20:20	1
d7-N-MeFOSE-M	136		25 - 150	09/19/23 23:09	09/22/23 20:20	1
d9-N-EtFOSE-M	134		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C3 HFPO-DA	141		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C-6:2 FTCA	139		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C-8:2 FTCA	146		25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C2 10:2 FTS	159	*5+	25 - 150	09/19/23 23:09	09/22/23 20:20	1
13C-6:2 FTUCA	180	*5+	25 - 150	09/19/23 23:09	09/22/23 20:20	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	3900		1300		ng/L		09/19/23 23:09	10/03/23 21:59	100
Perfluoropentanoic acid (PFPeA)	11000		500		ng/L		09/19/23 23:09	10/03/23 21:59	100
Perfluorohexanoic acid (PFHxA)	16000		500		ng/L		09/19/23 23:09	10/03/23 21:59	100
Perfluoroheptanoic acid (PFHpA)	3500		500		ng/L		09/19/23 23:09	10/03/23 21:59	100
Perfluorooctanoic acid (PFOA)	3600		500		ng/L		09/19/23 23:09	10/03/23 21:59	100

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW7

Lab Sample ID: 320-104763-6

Date Collected: 09/06/23 14:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	4700		500		ng/L		09/19/23 23:09	10/03/23 21:59	100
Perfluoropentanesulfonic acid (PFPeS)	5800		500		ng/L		09/19/23 23:09	10/03/23 21:59	100
Perfluorohexanesulfonic acid (PFHxS)	40000		500		ng/L		09/19/23 23:09	10/03/23 21:59	100
Perfluoroheptanesulfonic acid (PFHpS)	2200		500		ng/L		09/19/23 23:09	10/03/23 21:59	100
Perfluorooctanesulfonic acid (PFOS)	98000	E	500		ng/L		09/19/23 23:09	10/03/23 21:59	100
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	11000		1300		ng/L		09/19/23 23:09	10/03/23 21:59	100
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	84		25 - 150				09/19/23 23:09	10/03/23 21:59	100
13C5 PFPeA	94		25 - 150				09/19/23 23:09	10/03/23 21:59	100
13C2 PFHxA	106		25 - 150				09/19/23 23:09	10/03/23 21:59	100
13C4 PFHpA	90		25 - 150				09/19/23 23:09	10/03/23 21:59	100
13C4 PFOA	102		25 - 150				09/19/23 23:09	10/03/23 21:59	100
13C3 PFBS	106		25 - 150				09/19/23 23:09	10/03/23 21:59	100
18O2 PFHxS	111		25 - 150				09/19/23 23:09	10/03/23 21:59	100
13C4 PFOS	90		25 - 150				09/19/23 23:09	10/03/23 21:59	100
M2-6:2 FTS	134		25 - 150				09/19/23 23:09	10/03/23 21:59	100

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	5.6		5.0		ng/L		09/19/23 21:34	09/22/23 23:19	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	9.2		5.0		ng/L		09/19/23 21:34	09/22/23 23:19	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*	5.0		ng/L		09/19/23 21:34	09/22/23 23:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C5 PFPeA	87		25 - 150				09/19/23 21:34	09/22/23 23:19	1
13C2 PFHxA	94		25 - 150				09/19/23 21:34	09/22/23 23:19	1
M2-4:2 FTS	86	*5+	0 - 10				09/19/23 21:34	09/22/23 23:19	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	8900	H	5000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluoropentanoic acid (PFPeA)	14000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorohexanoic acid (PFHxA)	25000	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluoroheptanoic acid (PFHpA)	2900	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorooctanoic acid (PFOA)	3100	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorononanoic acid (PFNA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorodecanoic acid (PFDA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluoroundecanoic acid (PFUnA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorododecanoic acid (PFDoA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorotridecanoic acid (PFTrDA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorotetradecanoic acid (PFTeA)	ND	H **	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorobutanesulfonic acid (PFBS)	5700	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW7

Lab Sample ID: 320-104763-6

Date Collected: 09/06/23 14:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	6100	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorohexanesulfonic acid (PFHxS)	40000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorooctanesulfonic acid (PFOS)	69000	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorononanesulfonic acid (PFNS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorodecanesulfonic acid (PFDS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorododecanesulfonic acid (PFDoS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluorooctanesulfonamide (FOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	5000		ng/L		09/28/23 21:59	10/08/23 17:46	20
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	5000		ng/L		09/28/23 21:59	10/08/23 17:46	20
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	5000		ng/L		09/28/23 21:59	10/08/23 17:46	20
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	4000		ng/L		09/28/23 21:59	10/08/23 17:46	20
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	4000		ng/L		09/28/23 21:59	10/08/23 17:46	20
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
6:2 FTUCA	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	2000		ng/L		09/28/23 21:59	10/08/23 17:46	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	92		25 - 150				09/28/23 21:59	10/08/23 17:46	20
13C4 PFBA	86		25 - 150				09/28/23 21:59	10/08/23 17:46	20
13C5 PFPeA	91		25 - 150				09/28/23 21:59	10/08/23 17:46	20
13C2 PFHxA	95		25 - 150				09/28/23 21:59	10/08/23 17:46	20

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW7

Lab Sample ID: 320-104763-6

Date Collected: 09/06/23 14:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	89		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C4 PFOA	94		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C5 PFNA	84		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C2 PFDA	93		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C2 PFUnA	85		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C2 PFDoA	86		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C2 PFTeDA	114		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C2 PFHxDA	85		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C3 PFBS	88		25 - 150	09/28/23 21:59	10/08/23 17:46	20
18O2 PFHxS	90		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C4 PFOS	87		25 - 150	09/28/23 21:59	10/08/23 17:46	20
d5-NEtFOSAA	87		25 - 150	09/28/23 21:59	10/08/23 17:46	20
d3-NMeFOSAA	77		25 - 150	09/28/23 21:59	10/08/23 17:46	20
M2-4:2 FTS	0		0 - 10	09/28/23 21:59	10/08/23 17:46	20
M2-6:2 FTS	96		25 - 150	09/28/23 21:59	10/08/23 17:46	20
M2-8:2 FTS	95		25 - 150	09/28/23 21:59	10/08/23 17:46	20
d-N-MeFOSA-M	24	*5-	25 - 150	09/28/23 21:59	10/08/23 17:46	20
d-N-EtFOSA-M	18	*5-	25 - 150	09/28/23 21:59	10/08/23 17:46	20
d7-N-MeFOSE-M	38		25 - 150	09/28/23 21:59	10/08/23 17:46	20
d9-N-EtFOSE-M	33		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C3 HFPO-DA	87		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C-6:2 FTCA	78		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C-8:2 FTCA	72		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C2 10:2 FTS	77		25 - 150	09/28/23 21:59	10/08/23 17:46	20
13C-6:2 FTUCA	121		25 - 150	09/28/23 21:59	10/08/23 17:46	20

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	190		40		ug/L		10/02/23 10:31	10/04/23 02:15	1

Client Sample ID: KHFTA-MW8

Lab Sample ID: 320-104763-7

Date Collected: 09/06/23 13:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	30		13		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluoropentanoic acid (PFPeA)	46		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorohexanoic acid (PFHxA)	37		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluoroheptanoic acid (PFHpA)	12		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorooctanoic acid (PFOA)	5.6		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorobutanesulfonic acid (PFBS)	6.9		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW8

Lab Sample ID: 320-104763-7

Date Collected: 09/06/23 13:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanesulfonic acid (PFPeS)	9.6		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorohexanesulfonic acid (PFHxS)	65		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorooctanesulfonic acid (PFOS)	71		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 20:31	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 20:31	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	24		13		ng/L		09/19/23 23:09	09/22/23 20:31	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 23:09	09/22/23 20:31	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
9-Chlorohexadecafluoro-3-oxanonane e-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 23:09	09/22/23 20:31	1
11-Chloroeicosafluoro-3-oxaundecane e-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:31	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW8

Lab Sample ID: 320-104763-7

Date Collected: 09/06/23 13:15

Matrix: Water

Date Received: 09/12/23 09:30

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	102		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C4 PFBA	91		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C5 PFPeA	95		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C2 PFHxA	87		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C4 PFHpA	93		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C4 PFOA	95		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C5 PFNA	84		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C2 PFDA	98		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C2 PFUnA	91		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C2 PFDoA	93		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C2 PFTeDA	94		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C2 PFHxDA	82		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C3 PFBS	94		25 - 150	09/19/23 23:09	09/22/23 20:31	1
18O2 PFHxS	95		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C4 PFOS	92		25 - 150	09/19/23 23:09	09/22/23 20:31	1
d5-NEtFOSAA	93		25 - 150	09/19/23 23:09	09/22/23 20:31	1
d3-NMeFOSAA	97		25 - 150	09/19/23 23:09	09/22/23 20:31	1
M2-4:2 FTS	95		25 - 150	09/19/23 23:09	09/22/23 20:31	1
M2-6:2 FTS	101		25 - 150	09/19/23 23:09	09/22/23 20:31	1
M2-8:2 FTS	90		25 - 150	09/19/23 23:09	09/22/23 20:31	1
d-N-MeFOSA-M	84		25 - 150	09/19/23 23:09	09/22/23 20:31	1
d-N-EtFOSA-M	89		25 - 150	09/19/23 23:09	09/22/23 20:31	1
d7-N-MeFOSE-M	99		25 - 150	09/19/23 23:09	09/22/23 20:31	1
d9-N-EtFOSE-M	95		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C3 HFPO-DA	82		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C-6:2 FTCA	89		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C-8:2 FTCA	88		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C2 10:2 FTS	106		25 - 150	09/19/23 23:09	09/22/23 20:31	1
13C-6:2 FTUCA	110		25 - 150	09/19/23 23:09	09/22/23 20:31	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	43		13		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoropentanoic acid (PFPeA)	50	B **	5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorohexanoic acid (PFHxA)	47	***	5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoroheptanoic acid (PFHpA)	11	***	5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorooctanoic acid (PFOA)	5.4		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorononanoic acid (PFNA)	ND	**	5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorodecanoic acid (PFDA)	ND	**	5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorobutanesulfonic acid (PFBS)	6.5		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoropentanesulfonic acid (PFPeS)	9.2		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoroheptanesulfonic acid (PFHpS)	62		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW8

Lab Sample ID: 320-104763-7

Date Collected: 09/06/23 13:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	76		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 21:34	09/22/23 23:30	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 21:34	09/22/23 23:30	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		09/19/23 21:34	09/22/23 23:30	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 21:34	09/22/23 23:30	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 21:34	09/22/23 23:30	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*	5.0		ng/L		09/19/23 21:34	09/22/23 23:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	105		25 - 150				09/19/23 21:34	09/22/23 23:30	1
13C4 PFBA	94		25 - 150				09/19/23 21:34	09/22/23 23:30	1
13C5 PFPeA	98		25 - 150				09/19/23 21:34	09/22/23 23:30	1
13C2 PFHxA	98		25 - 150				09/19/23 21:34	09/22/23 23:30	1

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW8

Lab Sample ID: 320-104763-7

Date Collected: 09/06/23 13:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFHpA	99		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C4 PFOA	98		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C5 PFNA	97		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C2 PFDA	100		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C2 PFUnA	99		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C2 PFDoA	91		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C2 PFTeDA	91		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C2 PFHxDA	83		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C3 PFBS	102		25 - 150	09/19/23 21:34	09/22/23 23:30	1
18O2 PFHxS	104		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C4 PFOS	92		25 - 150	09/19/23 21:34	09/22/23 23:30	1
d5-NEtFOSAA	94		25 - 150	09/19/23 21:34	09/22/23 23:30	1
d3-NMeFOSAA	91		25 - 150	09/19/23 21:34	09/22/23 23:30	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:34	09/22/23 23:30	1
M2-6:2 FTS	95		25 - 150	09/19/23 21:34	09/22/23 23:30	1
M2-8:2 FTS	85		25 - 150	09/19/23 21:34	09/22/23 23:30	1
d-N-MeFOSA-M	72		25 - 150	09/19/23 21:34	09/22/23 23:30	1
d-N-EtFOSA-M	71		25 - 150	09/19/23 21:34	09/22/23 23:30	1
d7-N-MeFOSE-M	86		25 - 150	09/19/23 21:34	09/22/23 23:30	1
d9-N-EtFOSE-M	85		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C3 HFPO-DA	88		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C-6:2 FTCA	95		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C-8:2 FTCA	101		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C2 10:2 FTS	95		25 - 150	09/19/23 21:34	09/22/23 23:30	1
13C-6:2 FTUCA	112		25 - 150	09/19/23 21:34	09/22/23 23:30	1

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	ND		2.0		ug/L		10/09/23 13:39	10/09/23 18:58	1

Client Sample ID: KHFTA-MW9

Lab Sample ID: 320-104763-8

Date Collected: 09/06/23 10:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	920		13		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluoroheptanoic acid (PFHpA)	250		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorooctanoic acid (PFOA)	120		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorotridecanoic acid (PFTrDA)	5.0		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluoroheptanesulfonic acid (PFHpS)	42		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorooctanesulfonic acid (PFOS)	840		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluoronanesulfonic acid (PFNS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW9

Lab Sample ID: 320-104763-8

Date Collected: 09/06/23 10:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 20:53	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 20:53	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	560		13		ng/L		09/19/23 23:09	09/22/23 20:53	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 23:09	09/22/23 20:53	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 23:09	09/22/23 20:53	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Nonfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 20:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	111		25 - 150				09/19/23 23:09	09/22/23 20:53	1
13C4 PFBA	88		25 - 150				09/19/23 23:09	09/22/23 20:53	1
13C5 PFPeA	87		25 - 150				09/19/23 23:09	09/22/23 20:53	1
13C2 PFHxA	79		25 - 150				09/19/23 23:09	09/22/23 20:53	1
13C4 PFHpA	90		25 - 150				09/19/23 23:09	09/22/23 20:53	1
13C4 PFOA	99		25 - 150				09/19/23 23:09	09/22/23 20:53	1
13C5 PFNA	96		25 - 150				09/19/23 23:09	09/22/23 20:53	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW9

Lab Sample ID: 320-104763-8

Date Collected: 09/06/23 10:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	100		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C2 PFUnA	99		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C2 PFDoA	95		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C2 PFTeDA	99		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C2 PFHxDA	94		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C3 PFBS	92		25 - 150	09/19/23 23:09	09/22/23 20:53	1
18O2 PFHxS	87		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C4 PFOS	97		25 - 150	09/19/23 23:09	09/22/23 20:53	1
d5-NEtFOSAA	99		25 - 150	09/19/23 23:09	09/22/23 20:53	1
d3-NMeFOSAA	101		25 - 150	09/19/23 23:09	09/22/23 20:53	1
M2-4:2 FTS	102		25 - 150	09/19/23 23:09	09/22/23 20:53	1
M2-6:2 FTS	95		25 - 150	09/19/23 23:09	09/22/23 20:53	1
M2-8:2 FTS	105		25 - 150	09/19/23 23:09	09/22/23 20:53	1
d-N-MeFOSA-M	82		25 - 150	09/19/23 23:09	09/22/23 20:53	1
d-N-EtFOSA-M	88		25 - 150	09/19/23 23:09	09/22/23 20:53	1
d7-N-MeFOSE-M	90		25 - 150	09/19/23 23:09	09/22/23 20:53	1
d9-N-EtFOSE-M	91		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C3 HFPO-DA	89		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C-6:2 FTCA	89		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C-8:2 FTCA	103		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C2 10:2 FTS	105		25 - 150	09/19/23 23:09	09/22/23 20:53	1
13C-6:2 FTUCA	122		25 - 150	09/19/23 23:09	09/22/23 20:53	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	2300		50		ng/L		09/19/23 23:09	09/29/23 06:14	10
Perfluorohexanoic acid (PFHxA)	3800		50		ng/L		09/19/23 23:09	09/29/23 06:14	10
Perfluorobutanesulfonic acid (PFBS)	2700		50		ng/L		09/19/23 23:09	09/29/23 06:14	10
Perfluoropentanesulfonic acid (PFPeS)	1700		50		ng/L		09/19/23 23:09	09/29/23 06:14	10
Perfluorohexanesulfonic acid (PFHxS)	3100		50		ng/L		09/19/23 23:09	09/29/23 06:14	10

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	90		25 - 150	09/19/23 23:09	09/29/23 06:14	10
13C2 PFHxA	95		25 - 150	09/19/23 23:09	09/29/23 06:14	10
13C3 PFBS	95		25 - 150	09/19/23 23:09	09/29/23 06:14	10
18O2 PFHxS	107		25 - 150	09/19/23 23:09	09/29/23 06:14	10

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:52	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 23:52	1
Nonfluoro-3,6-dioxahexanoic acid (NFDHA)	ND	*	5.0		ng/L		09/19/23 21:34	09/22/23 23:52	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	90		25 - 150	09/19/23 21:34	09/22/23 23:52	1
13C2 PFHxA	86		25 - 150	09/19/23 21:34	09/22/23 23:52	1
M2-4:2 FTS	65	*5+	0 - 10	09/19/23 21:34	09/22/23 23:52	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW9

Lab Sample ID: 320-104763-8

Date Collected: 09/06/23 10:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1400	H	1300		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluoropentanoic acid (PFPeA)	2200	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorohexanoic acid (PFHxA)	3400	H **	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluoroheptanoic acid (PFHpA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorooctanoic acid (PFOA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorononanoic acid (PFNA)	ND	H **	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorodecanoic acid (PFDA)	ND	H **	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluoroundecanoic acid (PFUnA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorododecanoic acid (PFDoA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorotetradecanoic acid (PFTeA)	ND	H **	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorobutanesulfonic acid (PFBS)	2100	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluoropentanesulfonic acid (PFPeS)	1400	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorohexanesulfonic acid (PFHxS)	3200	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorooctanesulfonic acid (PFOS)	1700	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorononanesulfonic acid (PFNS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluorooctanesulfonamide (FOSA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	1300		ng/L		09/28/23 21:59	10/02/23 17:57	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	1300		ng/L		09/28/23 21:59	10/02/23 17:57	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	1300		ng/L		09/28/23 21:59	10/02/23 17:57	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	1000		ng/L		09/28/23 21:59	10/02/23 17:57	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	1000		ng/L		09/28/23 21:59	10/02/23 17:57	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW9

Lab Sample ID: 320-104763-8

Date Collected: 09/06/23 10:15

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
6:2 FTUCA	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 17:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	116		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C4 PFBA	94		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C5 PFPeA	97		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C2 PFHxA	100		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C4 PFHpA	109		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C4 PFOA	106		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C5 PFNA	111		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C2 PFDA	110		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C2 PFUnA	109		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C2 PFDoA	110		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C2 PFTeDA	118		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C2 PFHxDA	100		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C3 PFBS	100		25 - 150	09/28/23 21:59	10/02/23 17:57	1
18O2 PFHxS	103		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C4 PFOS	100		25 - 150	09/28/23 21:59	10/02/23 17:57	1
d5-NEtFOSAA	123		25 - 150	09/28/23 21:59	10/02/23 17:57	1
d3-NMeFOSAA	107		25 - 150	09/28/23 21:59	10/02/23 17:57	1
M2-4:2 FTS	0		0 - 10	09/28/23 21:59	10/02/23 17:57	1
M2-6:2 FTS	74		25 - 150	09/28/23 21:59	10/02/23 17:57	1
M2-8:2 FTS	92		25 - 150	09/28/23 21:59	10/02/23 17:57	1
d-N-MeFOSA-M	35		25 - 150	09/28/23 21:59	10/02/23 17:57	1
d-N-EtFOSA-M	35		25 - 150	09/28/23 21:59	10/02/23 17:57	1
d7-N-MeFOSE-M	46		25 - 150	09/28/23 21:59	10/02/23 17:57	1
d9-N-EtFOSE-M	42		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C3 HFPO-DA	98		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C-6:2 FTCA	90		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C-8:2 FTCA	100		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C2 10:2 FTS	125		25 - 150	09/28/23 21:59	10/02/23 17:57	1
13C-6:2 FTUCA	122		25 - 150	09/28/23 21:59	10/02/23 17:57	1

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	18		10		ug/L		10/05/23 13:12	10/06/23 16:10	1

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW11

Lab Sample ID: 320-104763-9

Date Collected: 09/06/23 10:40

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	33		13		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluoropentanoic acid (PFPeA)	73		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorohexanoic acid (PFHxA)	130		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluoroheptanoic acid (PFHpA)	16		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorooctanoic acid (PFOA)	16		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorobutanesulfonic acid (PFBS)	92		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluoropentanesulfonic acid (PFPeS)	69		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorohexanesulfonic acid (PFHxS)	230		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorooctanesulfonic acid (PFOS)	150		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 21:04	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 21:04	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		09/19/23 23:09	09/22/23 21:04	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 23:09	09/22/23 21:04	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 23:09	09/22/23 21:04	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW11

Lab Sample ID: 320-104763-9

Date Collected: 09/06/23 10:40

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	103		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C4 PFBA	95		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C5 PFPeA	93		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C2 PFHxA	97		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C4 PFHpA	97		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C4 PFOA	98		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C5 PFNA	99		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C2 PFDA	94		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C2 PFUnA	100		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C2 PFDaA	94		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C2 PFTeDA	92		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C2 PFHxDA	87		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C3 PFBS	100		25 - 150	09/19/23 23:09	09/22/23 21:04	1
18O2 PFHxS	103		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C4 PFOS	101		25 - 150	09/19/23 23:09	09/22/23 21:04	1
d5-NEtFOSAA	97		25 - 150	09/19/23 23:09	09/22/23 21:04	1
d3-NMeFOSAA	91		25 - 150	09/19/23 23:09	09/22/23 21:04	1
M2-4:2 FTS	101		25 - 150	09/19/23 23:09	09/22/23 21:04	1
M2-6:2 FTS	103		25 - 150	09/19/23 23:09	09/22/23 21:04	1
M2-8:2 FTS	104		25 - 150	09/19/23 23:09	09/22/23 21:04	1
d-N-MeFOSA-M	74		25 - 150	09/19/23 23:09	09/22/23 21:04	1
d-N-EtFOSA-M	70		25 - 150	09/19/23 23:09	09/22/23 21:04	1
d7-N-MeFOSE-M	88		25 - 150	09/19/23 23:09	09/22/23 21:04	1
d9-N-EtFOSE-M	84		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C3 HFPO-DA	82		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C-6:2 FTCA	87		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C-8:2 FTCA	100		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C2 10:2 FTS	100		25 - 150	09/19/23 23:09	09/22/23 21:04	1
13C-6:2 FTUCA	118		25 - 150	09/19/23 23:09	09/22/23 21:04	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	25		13		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluoropentanoic acid (PFPeA)	59	*+ B	5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorohexanoic acid (PFHxA)	110	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW11

Lab Sample ID: 320-104763-9

Date Collected: 09/06/23 10:40

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	15	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorooctanoic acid (PFOA)	14		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorononanoic acid (PFNA)	ND	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorodecanoic acid (PFDA)	ND	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorobutanesulfonic acid (PFBS)	68		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluoropentanesulfonic acid (PFPeS)	53		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorohexanesulfonic acid (PFHxS)	200		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluoroheptanesulfonic acid (PFHpS)	5.4		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorooctanesulfonic acid (PFOS)	170		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 21:34	09/23/23 00:03	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 21:34	09/23/23 00:03	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	15		13		ng/L		09/19/23 21:34	09/23/23 00:03	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 21:34	09/23/23 00:03	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 21:34	09/23/23 00:03	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW11

Lab Sample ID: 320-104763-9

Date Collected: 09/06/23 10:40

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	*-	5.0		ng/L		09/19/23 21:34	09/23/23 00:03	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	90		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C4 PFBA	64		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C5 PFPeA	99		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C2 PFHxA	97		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C4 PFHpA	104		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C4 PFOA	103		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C5 PFNA	99		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C2 PFDA	87		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C2 PFUnA	84		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C2 PFDoA	79		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C2 PFTeDA	96		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C2 PFHxDA	86		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C3 PFBS	110		25 - 150	09/19/23 21:34	09/23/23 00:03	1
18O2 PFHxS	113		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C4 PFOS	95		25 - 150	09/19/23 21:34	09/23/23 00:03	1
d5-NEtFOSAA	85		25 - 150	09/19/23 21:34	09/23/23 00:03	1
d3-NMeFOSAA	84		25 - 150	09/19/23 21:34	09/23/23 00:03	1
M2-4:2 FTS	84	*5+	0 - 10	09/19/23 21:34	09/23/23 00:03	1
M2-6:2 FTS	71		25 - 150	09/19/23 21:34	09/23/23 00:03	1
M2-8:2 FTS	64		25 - 150	09/19/23 21:34	09/23/23 00:03	1
d-N-MeFOSA-M	71		25 - 150	09/19/23 21:34	09/23/23 00:03	1
d-N-EtFOSA-M	74		25 - 150	09/19/23 21:34	09/23/23 00:03	1
d7-N-MeFOSE-M	78		25 - 150	09/19/23 21:34	09/23/23 00:03	1
d9-N-EtFOSE-M	81		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C3 HFPO-DA	92		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C-6:2 FTCA	93		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C-8:2 FTCA	104		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C2 10:2 FTS	84		25 - 150	09/19/23 21:34	09/23/23 00:03	1
13C-6:2 FTUCA	115		25 - 150	09/19/23 21:34	09/23/23 00:03	1

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	2.1		2.0		ug/L		10/09/23 13:39	10/09/23 20:09	1

Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-EB#1

Lab Sample ID: 320-104763-10

Date Collected: 09/06/23 12:30

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorotridecanoic acid (PFTTrDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 21:16	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 21:16	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		09/19/23 23:09	09/22/23 21:16	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 23:09	09/22/23 21:16	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 23:09	09/22/23 21:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-EB#1

Lab Sample ID: 320-104763-10

Date Collected: 09/06/23 12:30

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEASA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 21:16	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	103		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C4 PFBA	93		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C5 PFPeA	97		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C2 PFHxA	98		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C4 PFHpA	97		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C4 PFOA	97		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C5 PFNA	95		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C2 PFDA	97		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C2 PFUnA	98		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C2 PFDoA	90		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C2 PFTeDA	82		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C2 PFHxDA	74		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C3 PFBS	98		25 - 150	09/19/23 23:09	09/22/23 21:16	1
18O2 PFHxS	99		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C4 PFOS	95		25 - 150	09/19/23 23:09	09/22/23 21:16	1
d5-NEtFOSAA	103		25 - 150	09/19/23 23:09	09/22/23 21:16	1
d3-NMeFOSAA	100		25 - 150	09/19/23 23:09	09/22/23 21:16	1
M2-4:2 FTS	95		25 - 150	09/19/23 23:09	09/22/23 21:16	1
M2-6:2 FTS	108		25 - 150	09/19/23 23:09	09/22/23 21:16	1
M2-8:2 FTS	101		25 - 150	09/19/23 23:09	09/22/23 21:16	1
d-N-MeFOSA-M	72		25 - 150	09/19/23 23:09	09/22/23 21:16	1
d-N-EtFOSA-M	74		25 - 150	09/19/23 23:09	09/22/23 21:16	1
d7-N-MeFOSE-M	110		25 - 150	09/19/23 23:09	09/22/23 21:16	1
d9-N-EtFOSE-M	108		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C3 HFPO-DA	83		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C-6:2 FTCA	88		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C-8:2 FTCA	94		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C2 10:2 FTS	104		25 - 150	09/19/23 23:09	09/22/23 21:16	1
13C-6:2 FTUCA	120		25 - 150	09/19/23 23:09	09/22/23 21:16	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluoropentanoic acid (PFPeA)	ND	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorohexanoic acid (PFHxA)	ND	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluoroheptanoic acid (PFHpA)	ND	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1

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Client Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-EB#1

Lab Sample ID: 320-104763-10

Date Collected: 09/06/23 12:30

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	ND	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorodecanoic acid (PFDA)	ND	*+	5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 21:34	09/23/23 00:14	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 21:34	09/23/23 00:14	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		09/19/23 21:34	09/23/23 00:14	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 21:34	09/23/23 00:14	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 21:34	09/23/23 00:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-EB#1

Lab Sample ID: 320-104763-10

Date Collected: 09/06/23 12:30

Matrix: Water

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ND	*	5.0		ng/L		09/19/23 21:34	09/23/23 00:14	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	110		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C4 PFBA	98		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C5 PFPeA	104		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C2 PFHxA	103		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C4 PFHpA	100		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C4 PFOA	94		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C5 PFNA	94		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C2 PFDA	97		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C2 PFUnA	98		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C2 PFDaA	88		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C2 PFTeDA	102		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C2 PFHxDA	93		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C3 PFBS	105		25 - 150				09/19/23 21:34	09/23/23 00:14	1
18O2 PFHxS	105		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C4 PFOS	98		25 - 150				09/19/23 21:34	09/23/23 00:14	1
d5-NEtFOSAA	103		25 - 150				09/19/23 21:34	09/23/23 00:14	1
d3-NMeFOSAA	98		25 - 150				09/19/23 21:34	09/23/23 00:14	1
M2-4:2 FTS	0		0 - 10				09/19/23 21:34	09/23/23 00:14	1
M2-6:2 FTS	83		25 - 150				09/19/23 21:34	09/23/23 00:14	1
M2-8:2 FTS	85		25 - 150				09/19/23 21:34	09/23/23 00:14	1
d-N-MeFOSA-M	85		25 - 150				09/19/23 21:34	09/23/23 00:14	1
d-N-EtFOSA-M	88		25 - 150				09/19/23 21:34	09/23/23 00:14	1
d7-N-MeFOSE-M	88		25 - 150				09/19/23 21:34	09/23/23 00:14	1
d9-N-EtFOSE-M	87		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C3 HFPO-DA	88		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C-6:2 FTCA	94		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C-8:2 FTCA	103		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C2 10:2 FTS	103		25 - 150				09/19/23 21:34	09/23/23 00:14	1
13C-6:2 FTUCA	121		25 - 150				09/19/23 21:34	09/23/23 00:14	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	ND	H	500		ng/L		09/28/23 21:59	10/02/23 18:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOS	106		25 - 150				09/28/23 21:59	10/02/23 18:19	1

Method: ELLE - Lancaster ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	ND		2.0		ug/L		10/09/23 13:39	10/09/23 16:37	1

Isotope Dilution Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Pre-Treatment

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFOSA (25-150)	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)
320-104763-1 - RE	KHFTA-MW1	110	104	105	96	111	102	110	114
320-104763-1 - DL	KHFTA-MW1								
320-104763-2 - RE	KHFTA-MW2	113	100	102	98	112	106	104	111
320-104763-2 - DL	KHFTA-MW2								
320-104763-3 - RE	KHFTA-MW3	119	104	98	96	104	92	104	108
320-104763-3 - DL	KHFTA-MW3								
320-104763-4 - RE	KHFTA-MW4	126	103	98	111	111	106	111	132
320-104763-4 - DL	KHFTA-MW4								
320-104763-5 - RE	KHFTA-MW5	126	105	103	110	109	99	106	112
320-104763-5 - DL	KHFTA-MW5								
320-104763-6	KHFTA-MW7	163 *5+	103	94	93	70	96	52	155 *5+
320-104763-6 - DL	KHFTA-MW7		84	94	106	90	102		
320-104763-7	KHFTA-MW8	102	91	95	87	93	95	84	98
320-104763-8	KHFTA-MW9	111	88	87	79	90	99	96	100
320-104763-8 - DL	KHFTA-MW9			90	95				
320-104763-9	KHFTA-MW11	103	95	93	97	97	98	99	94
320-104763-10	KHFTA-EB#1	103	93	97	98	97	97	95	97
LCS 320-707545/2-A	Lab Control Sample	102	94	103	107	99	93	98	100
LCS 320-709747/2-A	Lab Control Sample	123	104	106	104	113	106	103	116
LCSD 320-707545/3-A	Lab Control Sample Dup	94	98	98	99	101	92	93	97
LCSD 320-709747/3-A	Lab Control Sample Dup	122	98	98	100	105	103	106	110
MB 320-707545/1-A	Method Blank	90	93	98	97	101	105	107	105
MB 320-709747/1-A	Method Blank	124	105	106	101	106	104	109	109

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
320-104763-1 - RE	KHFTA-MW1	106	99	103	87	101	98	93	118
320-104763-1 - DL	KHFTA-MW1				89				
320-104763-2 - RE	KHFTA-MW2	110	98	110	93	99	104	103	112
320-104763-2 - DL	KHFTA-MW2				76				
320-104763-3 - RE	KHFTA-MW3	97	96	92	82	99	96	98	127
320-104763-3 - DL	KHFTA-MW3				71				
320-104763-4 - RE	KHFTA-MW4	105	104	98	97	103	115	96	119
320-104763-4 - DL	KHFTA-MW4				97				
320-104763-5 - RE	KHFTA-MW5	105	109	113	98	113	103	102	108
320-104763-5 - DL	KHFTA-MW5			101					
320-104763-6	KHFTA-MW7	144	145	150	122	123	65	36	143
320-104763-6 - DL	KHFTA-MW7					106	111	90	
320-104763-7	KHFTA-MW8	91	93	94	82	94	95	92	93
320-104763-8	KHFTA-MW9	99	95	99	94	92	87	97	99
320-104763-8 - DL	KHFTA-MW9					95	107		
320-104763-9	KHFTA-MW11	100	94	92	87	100	103	101	97
320-104763-10	KHFTA-EB#1	98	90	82	74	98	99	95	103
LCS 320-707545/2-A	Lab Control Sample	100	96	97	81	98	92	97	94
LCS 320-709747/2-A	Lab Control Sample	121	115	124	103	111	117	109	128
LCSD 320-707545/3-A	Lab Control Sample Dup	93	93	101	96	105	99	101	96
LCSD 320-709747/3-A	Lab Control Sample Dup	123	120	123	80	100	105	104	136
MB 320-707545/1-A	Method Blank	99	89	90	90	99	102	96	93
MB 320-709747/1-A	Method Blank	128	127	117	105	115	119	110	141

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Isotope Dilution Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water

Prep Type: Pre-Treatment

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		d3NMFOS (25-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	dMeFOSA (25-150)	dEtFOSA (25-150)	NMFM (25-150)	NEFM (25-150)
320-104763-1 - RE	KHFTA-MW1	110	88	126	106				
320-104763-1 - DL	KHFTA-MW1					79	63	161 *5+	98
320-104763-2 - RE	KHFTA-MW2	89	86	139	119				
320-104763-2 - DL	KHFTA-MW2					28	85	112	105
320-104763-3 - RE	KHFTA-MW3	92	90	99	114				
320-104763-3 - DL	KHFTA-MW3					98	63	55	74
320-104763-4 - RE	KHFTA-MW4	115	98	156 *5+	124				
320-104763-4 - DL	KHFTA-MW4					73	88	125	112
320-104763-5 - RE	KHFTA-MW5	119	87	166 *5+	117				
320-104763-5 - DL	KHFTA-MW5					126	84	100	117
320-104763-6	KHFTA-MW7	144	113		152 *5+	136	127	136	134
320-104763-6 - DL	KHFTA-MW7			134					
320-104763-7	KHFTA-MW8	97	95	101	90	84	89	99	95
320-104763-8	KHFTA-MW9	101	102	95	105	82	88	90	91
320-104763-8 - DL	KHFTA-MW9								
320-104763-9	KHFTA-MW11	91	101	103	104	74	70	88	84
320-104763-10	KHFTA-EB#1	100	95	108	101	72	74	110	108
LCS 320-707545/2-A	Lab Control Sample	105	113	105	97	76	64	90	84
LCS 320-709747/2-A	Lab Control Sample	107	107	109	129				
LCSD 320-707545/3-A	Lab Control Sample Dup	96	107	103	97	74	74	88	85
LCSD 320-709747/3-A	Lab Control Sample Dup	119	101	106	114				
MB 320-707545/1-A	Method Blank	91	102	104	105	71	74	81	79
MB 320-709747/1-A	Method Blank	128	111	115	126				

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)				
		HFPODA (25-150)	MFHEA (25-150)	MFOEA (25-150)	M102FTS (25-150)	MFHUEA (25-150)
320-104763-1 - RE	KHFTA-MW1	98	73	98	155 *5+	131
320-104763-1 - DL	KHFTA-MW1					
320-104763-2 - RE	KHFTA-MW2	99	87	92	138	128
320-104763-2 - DL	KHFTA-MW2					
320-104763-3 - RE	KHFTA-MW3	99	89	92	125	123
320-104763-3 - DL	KHFTA-MW3					
320-104763-4 - RE	KHFTA-MW4	91	67	115	133	134
320-104763-4 - DL	KHFTA-MW4					
320-104763-5 - RE	KHFTA-MW5	64	109	97	144	129
320-104763-5 - DL	KHFTA-MW5					
320-104763-6	KHFTA-MW7	141	139	146	159 *5+	180 *5+
320-104763-6 - DL	KHFTA-MW7					
320-104763-7	KHFTA-MW8	82	89	88	106	110
320-104763-8	KHFTA-MW9	89	89	103	105	122
320-104763-8 - DL	KHFTA-MW9					
320-104763-9	KHFTA-MW11	82	87	100	100	118
320-104763-10	KHFTA-EB#1	83	88	94	104	120
LCS 320-707545/2-A	Lab Control Sample	95	90	88	105	117
LCS 320-709747/2-A	Lab Control Sample	93	106	115	166 *5+	140
LCSD 320-707545/3-A	Lab Control Sample Dup	91	86	92	96	114
LCSD 320-709747/3-A	Lab Control Sample Dup	93	100	111	156 *5+	134
MB 320-707545/1-A	Method Blank	91	92	96	119	118
MB 320-709747/1-A	Method Blank	97	106	112	173 *5+	140

Isotope Dilution Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Surrogate Legend

PFOSA = 13C8 FOSA
 PFBA = 13C4 PFBA
 PFPeA = 13C5 PFPeA
 PFHxA = 13C2 PFHxA
 C4PFHA = 13C4 PFHpA
 PFOA = 13C4 PFOA
 PFNA = 13C5 PFNA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDoA = 13C2 PFDoA
 PFTDA = 13C2 PFTeDA
 PFHxDA = 13C2 PFHxDA
 C3PFBS = 13C3 PFBS
 PFHxS = 18O2 PFHxS
 PFOS = 13C4 PFOS
 d5NEFOS = d5-NEtFOSAA
 d3NMFOS = d3-NMeFOSAA
 M242FTS = M2-4:2 FTS
 M262FTS = M2-6:2 FTS
 M282FTS = M2-8:2 FTS
 dMeFOSA = d-N-MeFOSA-M
 dEtFOSA = d-N-EtFOSA-M
 NMFM = d7-N-MeFOSE-M
 NEFM = d9-N-EtFOSE-M
 HFPODA = 13C3 HFPO-DA
 MFHEA = 13C-6:2 FTCA
 MFOEA = 13C-8:2 FTCA
 M102FTS = 13C2 10:2 FTS
 MFHUEA = 13C-6:2 FTUCA

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Post-Treatment

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFOSA (25-150)	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)
320-104763-1	KHFTA-MW1			65	173 *5+				
320-104763-1 - RE	KHFTA-MW1	103	86	99	98	94	93	83	88
320-104763-2	KHFTA-MW2			51	174 *5+				
320-104763-2 - RE	KHFTA-MW2	102	83	89	91	89	87	85	84
320-104763-3	KHFTA-MW3			38	85				
320-104763-3 - RE	KHFTA-MW3	100	93	98	95	93	97	91	94
320-104763-4	KHFTA-MW4			84	128				
320-104763-4 - RE	KHFTA-MW4	98	93	90	91	91	95	87	99
320-104763-5	KHFTA-MW5			83	128				
320-104763-5 - RE	KHFTA-MW5	114	98	104	103	104	105	103	113
320-104763-6	KHFTA-MW7			87	94				
320-104763-6 - RE	KHFTA-MW7	92	86	91	95	89	94	84	93
320-104763-7	KHFTA-MW8	105	94	98	98	99	98	97	100
320-104763-8	KHFTA-MW9			90	86				
320-104763-8 - RE	KHFTA-MW9	116	94	97	100	109	106	111	110
320-104763-9	KHFTA-MW11	90	64	99	97	104	103	99	87
320-104763-10	KHFTA-EB#1	110	98	104	103	100	94	94	97
320-104763-10 - RE	KHFTA-EB#1								
LCS 320-707539/2-A	Lab Control Sample			97	95				

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Isotope Dilution Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water

Prep Type: Post-Treatment

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOSA (25-150)	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)
LCS 320-709748/2-A	Lab Control Sample	114	91	94		102	100		
LCS 320-707539/3-A	Lab Control Sample Dup			95	108				
LCS 320-709748/3-A	Lab Control Sample Dup	128	98	108		120	107		
MB 320-707539/1-A	Method Blank			97	101				
MB 320-709748/1-A	Method Blank	116	95	100		105	98		

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFUnA (25-150)	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
320-104763-1	KHFTA-MW1								
320-104763-1 - RE	KHFTA-MW1	96	82	113	75	88	91	85	101
320-104763-2	KHFTA-MW2								
320-104763-2 - RE	KHFTA-MW2	88	84	112	72	80	94	83	95
320-104763-3	KHFTA-MW3								
320-104763-3 - RE	KHFTA-MW3	92	84	115	83	85	101	102	97
320-104763-4	KHFTA-MW4								
320-104763-4 - RE	KHFTA-MW4	95	84	102	89	90	106	87	101
320-104763-5	KHFTA-MW5								
320-104763-5 - RE	KHFTA-MW5	100	83	133	90	106	116	110	117
320-104763-6	KHFTA-MW7								
320-104763-6 - RE	KHFTA-MW7	85	86	114	85	88	90	87	87
320-104763-7	KHFTA-MW8								
320-104763-7	KHFTA-MW8	99	91	91	83	102	104	92	94
320-104763-8	KHFTA-MW9								
320-104763-8 - RE	KHFTA-MW9	109	110	118	100	100	103	100	123
320-104763-9	KHFTA-MW11								
320-104763-9	KHFTA-MW11	84	79	96	86	110	113	95	85
320-104763-10	KHFTA-EB#1								
320-104763-10	KHFTA-EB#1	98	88	102	93	105	105	98	103
320-104763-10 - RE	KHFTA-EB#1							106	
LCS 320-707539/2-A	Lab Control Sample								
LCS 320-709748/2-A	Lab Control Sample	114	103	104	96	103	104	99	115
LCS 320-707539/3-A	Lab Control Sample Dup								
LCS 320-709748/3-A	Lab Control Sample Dup	122	105	103	101	115	115	110	142
MB 320-707539/1-A	Method Blank								
MB 320-709748/1-A	Method Blank	114	110	109	87	105	101	101	124

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d3NMFOS (25-150)	M242FTS (0-10)	M262FTS (25-150)	M282FTS (25-150)	dMeFOSA (25-150)	dEtFOSA (25-150)	NMFM (25-150)	NEFM (25-150)
320-104763-1	KHFTA-MW1		107 *5+						
320-104763-1 - RE	KHFTA-MW1	95	0	112	78	26	15 *5-	41	30
320-104763-2	KHFTA-MW2		55 *5+						
320-104763-2 - RE	KHFTA-MW2	91	0	99	78	32	27	42	40
320-104763-3	KHFTA-MW3		0						
320-104763-3 - RE	KHFTA-MW3	93	0	97	102	42	37	75	62
320-104763-4	KHFTA-MW4		101 *5+						
320-104763-4 - RE	KHFTA-MW4	103	0	101	91	56	38	83	86
320-104763-5	KHFTA-MW5		0						
320-104763-5 - RE	KHFTA-MW5	113	75 *5+	183 *5+	112	40	33	52	46
320-104763-6	KHFTA-MW7		86 *5+						
320-104763-6 - RE	KHFTA-MW7	77	0	96	95	24 *5-	18 *5-	38	33
320-104763-7	KHFTA-MW8		0						
320-104763-7	KHFTA-MW8	91	0	95	85	72	71	86	85
320-104763-8	KHFTA-MW9		65 *5+						

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Isotope Dilution Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water

Prep Type: Post-Treatment

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	d3NMFOS (25-150)	M242FTS (0-10)	M262FTS (25-150)	M282FTS (25-150)	dMeFOSA (25-150)	dEtFOSA (25-150)	NMFM (25-150)	NEFM (25-150)
320-104763-8 - RE	KHFTA-MW9	107	0	74	92	35	35	46	42
320-104763-9	KHFTA-MW11	84	84 *5+	71	64	71	74	78	81
320-104763-10	KHFTA-EB#1	98	0	83	85	85	88	88	87
320-104763-10 - RE	KHFTA-EB#1								
LCS 320-707539/2-A	Lab Control Sample		0						
LCS 320-709748/2-A	Lab Control Sample	102	0	80	93	42	41	40	37
LCSD 320-707539/3-A	Lab Control Sample Dup		0						
LCSD 320-709748/3-A	Lab Control Sample Dup	111	0	89	107	36	37	44	43
MB 320-707539/1-A	Method Blank		0						
MB 320-709748/1-A	Method Blank	99	0	87	102	35	40	44	46

		Percent Isotope Dilution Recovery (Acceptance Limits)				
Lab Sample ID	Client Sample ID	HFPODA (25-150)	MFHEA (25-150)	MFOEA (25-150)	M102FTS (25-150)	MFHUEA (25-150)
320-104763-1	KHFTA-MW1					
320-104763-1 - RE	KHFTA-MW1	98	92	100	105	128
320-104763-2	KHFTA-MW2					
320-104763-2 - RE	KHFTA-MW2	67	76	76	62	124
320-104763-3	KHFTA-MW3					
320-104763-3 - RE	KHFTA-MW3	110	69	70	95	118
320-104763-4	KHFTA-MW4					
320-104763-4 - RE	KHFTA-MW4	97	85	105	80	130
320-104763-5	KHFTA-MW5					
320-104763-5 - RE	KHFTA-MW5	86	90	86	116	132
320-104763-6	KHFTA-MW7					
320-104763-6 - RE	KHFTA-MW7	87	78	72	77	121
320-104763-7	KHFTA-MW8					
320-104763-8	KHFTA-MW9					
320-104763-8 - RE	KHFTA-MW9	98	90	100	125	122
320-104763-9	KHFTA-MW11					
320-104763-9	KHFTA-MW11	92	93	104	84	115
320-104763-10	KHFTA-EB#1					
320-104763-10 - RE	KHFTA-EB#1	88	94	103	103	121
LCS 320-707539/2-A	Lab Control Sample					
LCS 320-709748/2-A	Lab Control Sample	84	96	95	113	129
LCSD 320-707539/3-A	Lab Control Sample Dup					
LCSD 320-709748/3-A	Lab Control Sample Dup	99	105	109	124	137
MB 320-707539/1-A	Method Blank					
MB 320-709748/1-A	Method Blank	85	84	87	135	121

Surrogate Legend

- PFOSA = 13C8 FOSA
- PFBA = 13C4 PFBA
- PFPeA = 13C5 PFPeA
- PFHxA = 13C2 PFHxA
- C4PFHA = 13C4 PFHpA
- PFOA = 13C4 PFOA
- PFNA = 13C5 PFNA
- PFDA = 13C2 PFDA
- PFUnA = 13C2 PFUnA
- PFDaA = 13C2 PFDaA
- PFTDA = 13C2 PFTeDA

Isotope Dilution Summary

Client: Hawaii Department of Health

Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

PFHxDA = 13C2 PFHxDA

C3PFBS = 13C3 PFBS

PFHxS = 18O2 PFHxS

PFOS = 13C4 PFOS

d5NEFOS = d5-NEtFOSAA

d3NMFOS = d3-NMeFOSAA

M242FTS = M2-4:2 FTS

M262FTS = M2-6:2 FTS

M282FTS = M2-8:2 FTS

dMeFOSA = d-N-MeFOSA-M

dEtFOSA = d-N-EtFOSA-M

NMFM = d7-N-MeFOSE-M

NEFM = d9-N-EtFOSE-M

HFPODA = 13C3 HFPO-DA

MFHEA = 13C-6:2 FTCA

MFOEA = 13C-8:2 FTCA

M102FTS = 13C2 10:2 FTS

MFHUEA = 13C-6:2 FTUCA

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-707545/1-A
Matrix: Water
Analysis Batch: 708498

Client Sample ID: Method Blank
Prep Type: Pre-Treatment
Prep Batch: 707545

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorotridecanoic acid (PFTriDA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 18:50	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/19/23 23:09	09/22/23 18:50	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		09/19/23 23:09	09/22/23 18:50	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/19/23 23:09	09/22/23 18:50	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/19/23 23:09	09/22/23 18:50	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-707545/1-A

Matrix: Water

Analysis Batch: 708498

Client Sample ID: Method Blank

Prep Type: Pre-Treatment

Prep Batch: 707545

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
6:2 FTUCA	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/19/23 23:09	09/22/23 18:50	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 FOSA	90		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C4 PFBA	93		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C5 PFPeA	98		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C2 PFHxA	97		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C4 PFHpA	101		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C4 PFOA	105		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C5 PFNA	107		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C2 PFDA	105		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C2 PFUnA	99		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C2 PFDoA	89		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C2 PFTeDA	90		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C2 PFHxDA	90		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C3 PFBS	99		25 - 150	09/19/23 23:09	09/22/23 18:50	1
18O2 PFHxS	102		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C4 PFOS	96		25 - 150	09/19/23 23:09	09/22/23 18:50	1
d5-NEtFOSAA	93		25 - 150	09/19/23 23:09	09/22/23 18:50	1
d3-NMeFOSAA	91		25 - 150	09/19/23 23:09	09/22/23 18:50	1
M2-4:2 FTS	102		25 - 150	09/19/23 23:09	09/22/23 18:50	1
M2-6:2 FTS	104		25 - 150	09/19/23 23:09	09/22/23 18:50	1
M2-8:2 FTS	105		25 - 150	09/19/23 23:09	09/22/23 18:50	1
d-N-MeFOSA-M	71		25 - 150	09/19/23 23:09	09/22/23 18:50	1
d-N-EtFOSA-M	74		25 - 150	09/19/23 23:09	09/22/23 18:50	1
d7-N-MeFOSE-M	81		25 - 150	09/19/23 23:09	09/22/23 18:50	1
d9-N-EtFOSE-M	79		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C3 HFPO-DA	91		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C-6:2 FTCA	92		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C-8:2 FTCA	96		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C2 10:2 FTS	119		25 - 150	09/19/23 23:09	09/22/23 18:50	1
13C-6:2 FTUCA	118		25 - 150	09/19/23 23:09	09/22/23 18:50	1

QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-707545/2-A

Matrix: Water

Analysis Batch: 708498

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 707545

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	100	108		ng/L		108	76 - 136
Perfluoropentanoic acid (PFPeA)	100	109		ng/L		109	71 - 131
Perfluorohexanoic acid (PFHxA)	100	109		ng/L		109	73 - 133
Perfluoroheptanoic acid (PFHpA)	100	113		ng/L		113	72 - 132
Perfluorooctanoic acid (PFOA)	100	125		ng/L		125	70 - 130
Perfluorononanoic acid (PFNA)	100	116		ng/L		116	75 - 135
Perfluorodecanoic acid (PFDA)	100	116		ng/L		116	76 - 136
Perfluoroundecanoic acid (PFUnA)	100	118		ng/L		118	68 - 128
Perfluorododecanoic acid (PFDoA)	100	120		ng/L		120	71 - 131
Perfluorotridecanoic acid (PFTrDA)	100	113		ng/L		113	71 - 131
Perfluorotetradecanoic acid (PFTeA)	100	106		ng/L		106	70 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	128		ng/L		128	76 - 136
Perfluoro-n-octadecanoic acid (PFODA)	100	114		ng/L		114	58 - 145
Perfluorobutanesulfonic acid (PFBS)	88.8	87.3		ng/L		98	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	94.0	102		ng/L		108	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	91.2	108		ng/L		118	59 - 119
Perfluoroheptanesulfonic acid (PFHpS)	95.4	118		ng/L		123	76 - 136
Perfluorooctanesulfonic acid (PFOS)	93.0	111		ng/L		120	70 - 130
Perfluorononanesulfonic acid (PFNS)	96.2	115		ng/L		119	75 - 135
Perfluorodecanesulfonic acid (PFDS)	96.4	105		ng/L		109	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	97.0	104		ng/L		107	67 - 127
Perfluorooctanesulfonamide (FOSA)	100	99.9		ng/L		100	73 - 133
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	108		ng/L		108	76 - 136
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	108		ng/L		108	76 - 136
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	105		ng/L		112	79 - 139
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	107		ng/L		112	59 - 175
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	116		ng/L		121	75 - 135
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	96.6	96.9		ng/L		100	64 - 142
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	112		ng/L		112	78 - 138

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-707545/2-A

Matrix: Water

Analysis Batch: 708498

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 707545

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	107		ng/L		107	67 - 154
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	110		ng/L		110	70 - 130
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	99.7		ng/L		100	71 - 131
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	112		ng/L		120	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	114		ng/L		114	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	103		ng/L		109	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	101		ng/L		107	79 - 139
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	118		ng/L		118	70 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	119		ng/L		119	70 - 130
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	118		ng/L		118	70 - 130
PFECHS	92.4	107		ng/L		116	70 - 130
PFPoS	92.0	107		ng/L		116	70 - 130
6:2 FTUCA	100	93.8		ng/L		94	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	105		ng/L		117	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	105		ng/L		105	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	104		ng/L		104	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	94.5		ng/L		95	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C8 FOSA	102		25 - 150
13C4 PFBA	94		25 - 150
13C5 PFPeA	103		25 - 150
13C2 PFHxA	107		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	93		25 - 150
13C5 PFNA	98		25 - 150
13C2 PFDA	100		25 - 150
13C2 PFUnA	100		25 - 150
13C2 PFDaA	96		25 - 150
13C2 PFTeDA	97		25 - 150
13C2 PFHxDA	81		25 - 150
13C3 PFBS	98		25 - 150
18O2 PFHxS	92		25 - 150
13C4 PFOS	97		25 - 150
d5-NEtFOSAA	94		25 - 150
d3-NMeFOSAA	105		25 - 150

QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-707545/2-A

Matrix: Water

Analysis Batch: 708498

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 707545

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	113		25 - 150
M2-6:2 FTS	105		25 - 150
M2-8:2 FTS	97		25 - 150
d-N-MeFOSA-M	76		25 - 150
d-N-EtFOSA-M	64		25 - 150
d7-N-MeFOSE-M	90		25 - 150
d9-N-EtFOSE-M	84		25 - 150
13C3 HFPO-DA	95		25 - 150
13C-6:2 FTCA	90		25 - 150
13C-8:2 FTCA	88		25 - 150
13C2 10:2 FTS	105		25 - 150
13C-6:2 FTUCA	117		25 - 150

Lab Sample ID: LCSD 320-707545/3-A

Matrix: Water

Analysis Batch: 708498

Client Sample ID: Lab Control Sample Dup

Prep Type: Pre-Treatment

Prep Batch: 707545

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	
							Limits	RPD	RPD	Limit
Perfluorobutanoic acid (PFBA)	100	99.9		ng/L		100	76 - 136	8	30	
Perfluoropentanoic acid (PFPeA)	100	104		ng/L		104	71 - 131	5	30	
Perfluorohexanoic acid (PFHxA)	100	102		ng/L		102	73 - 133	6	30	
Perfluoroheptanoic acid (PFHpA)	100	106		ng/L		106	72 - 132	6	30	
Perfluorooctanoic acid (PFOA)	100	115		ng/L		115	70 - 130	8	30	
Perfluorononanoic acid (PFNA)	100	112		ng/L		112	75 - 135	4	30	
Perfluorodecanoic acid (PFDA)	100	105		ng/L		105	76 - 136	10	30	
Perfluoroundecanoic acid (PFUnA)	100	108		ng/L		108	68 - 128	9	30	
Perfluorododecanoic acid (PFDoA)	100	114		ng/L		114	71 - 131	5	30	
Perfluorotridecanoic acid (PFTrDA)	100	112		ng/L		112	71 - 131	1	30	
Perfluorotetradecanoic acid (PFTeA)	100	99.6		ng/L		100	70 - 130	6	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	106		ng/L		106	76 - 136	19	30	
Perfluoro-n-octadecanoic acid (PFODA)	100	102		ng/L		102	58 - 145	11	30	
Perfluorobutanesulfonic acid (PFBS)	88.8	80.2		ng/L		90	67 - 127	8	30	
Perfluoropentanesulfonic acid (PFPeS)	94.0	91.3		ng/L		97	66 - 126	11	30	
Perfluorohexanesulfonic acid (PFHxS)	91.2	93.9		ng/L		103	59 - 119	14	30	
Perfluoroheptanesulfonic acid (PFHpS)	95.4	100		ng/L		105	76 - 136	16	30	
Perfluorooctanesulfonic acid (PFOS)	93.0	99.0		ng/L		106	70 - 130	12	30	
Perfluoronanesulfonic acid (PFNS)	96.2	109		ng/L		113	75 - 135	5	30	
Perfluorodecanesulfonic acid (PFDS)	96.4	96.2		ng/L		100	71 - 131	9	30	

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-707545/3-A

Matrix: Water

Analysis Batch: 708498

Client Sample ID: Lab Control Sample Dup

Prep Type: Pre-Treatment

Prep Batch: 707545

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec	RPD	RPD Limit
							Limits		
Perfluorododecanesulfonic acid (PFDoS)	97.0	95.5		ng/L		99	67 - 127	8	30
Perfluorooctanesulfonamide (FOSA)	100	103		ng/L		103	73 - 133	3	30
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	109		ng/L		109	76 - 136	1	30
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	96.0		ng/L		96	76 - 136	12	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	83.5		ng/L		89	79 - 139	23	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	96.4		ng/L		101	59 - 175	10	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	111		ng/L		116	75 - 135	4	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	96.6	101		ng/L		104	64 - 142	4	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	105		ng/L		105	78 - 138	6	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	104		ng/L		104	67 - 154	4	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	103		ng/L		103	70 - 130	6	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	108		ng/L		108	71 - 131	8	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	99.5		ng/L		107	75 - 135	12	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	106		ng/L		106	51 - 173	7	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	92.7		ng/L		98	54 - 114	10	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	94.4		ng/L		100	79 - 139	7	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	102		ng/L		102	70 - 130	15	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	121		ng/L		121	70 - 130	1	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	105		ng/L		105	70 - 130	12	30
PFECHS	92.4	104		ng/L		112	70 - 130	3	30
PFPoS	92.0	93.2		ng/L		101	70 - 130	13	30
6:2 FTUCA	100	91.0		ng/L		91	70 - 130	3	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	89.2	85.0		ng/L		95	70 - 130	21	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	106		ng/L		106	70 - 130	1	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	107		ng/L		107	70 - 130	3	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	107		ng/L		107	70 - 130	12	30

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	94		25 - 150
13C4 PFBA	98		25 - 150
13C5 PFPeA	98		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFHpA	101		25 - 150
13C4 PFOA	92		25 - 150
13C5 PFNA	93		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	93		25 - 150
13C2 PFDoA	93		25 - 150
13C2 PFTeDA	101		25 - 150
13C2 PFHxDA	96		25 - 150
13C3 PFBS	105		25 - 150
18O2 PFHxS	99		25 - 150
13C4 PFOS	101		25 - 150
d5-NEtFOSAA	96		25 - 150
d3-NMeFOSAA	96		25 - 150
M2-4:2 FTS	107		25 - 150
M2-6:2 FTS	103		25 - 150
M2-8:2 FTS	97		25 - 150
d-N-MeFOSA-M	74		25 - 150
d-N-EtFOSA-M	74		25 - 150
d7-N-MeFOSE-M	88		25 - 150
d9-N-EtFOSE-M	85		25 - 150
13C3 HFPO-DA	91		25 - 150
13C-6:2 FTCA	86		25 - 150
13C-8:2 FTCA	92		25 - 150
13C2 10:2 FTS	96		25 - 150
13C-6:2 FTUCA	114		25 - 150

Lab Sample ID: MB 320-709747/1-A
Matrix: Water
Analysis Batch: 710352

Client Sample ID: Method Blank
Prep Type: Pre-Treatment
Prep Batch: 709747

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-709747/1-A

Matrix: Water

Analysis Batch: 710352

Client Sample ID: Method Blank

Prep Type: Pre-Treatment

Prep Batch: 709747

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		09/28/23 21:33	10/02/23 13:17	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		09/28/23 21:33	10/02/23 13:17	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		09/28/23 21:33	10/02/23 13:17	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/28/23 21:33	10/02/23 13:17	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
6:2 FTUCA	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ND		5.0		ng/L		09/28/23 21:33	10/02/23 13:17	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 FOSA	124		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C4 PFBA	105		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C5 PFPeA	106		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C2 PFHxA	101		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C4 PFHpA	106		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C4 PFOA	104		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C5 PFNA	109		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C2 PFDA	109		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C2 PFUnA	128		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C2 PFDoA	127		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C2 PFTeDA	117		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C2 PFHxDA	105		25 - 150	09/28/23 21:33	10/02/23 13:17	1

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-709747/1-A

Matrix: Water

Analysis Batch: 710352

Client Sample ID: Method Blank

Prep Type: Pre-Treatment

Prep Batch: 709747

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C3 PFBS	115		25 - 150	09/28/23 21:33	10/02/23 13:17	1
18O2 PFHxS	119		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C4 PFOS	110		25 - 150	09/28/23 21:33	10/02/23 13:17	1
d5-NEtFOSAA	141		25 - 150	09/28/23 21:33	10/02/23 13:17	1
d3-NMeFOSAA	128		25 - 150	09/28/23 21:33	10/02/23 13:17	1
M2-4:2 FTS	111		25 - 150	09/28/23 21:33	10/02/23 13:17	1
M2-6:2 FTS	115		25 - 150	09/28/23 21:33	10/02/23 13:17	1
M2-8:2 FTS	126		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C3 HFPO-DA	97		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C-6:2 FTCA	106		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C-8:2 FTCA	112		25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C2 10:2 FTS	173	*5+	25 - 150	09/28/23 21:33	10/02/23 13:17	1
13C-6:2 FTUCA	140		25 - 150	09/28/23 21:33	10/02/23 13:17	1

Lab Sample ID: LCS 320-709747/2-A

Matrix: Water

Analysis Batch: 710352

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 709747

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Perfluorobutanoic acid (PFBA)	100	103		ng/L		103	76 - 136
Perfluoropentanoic acid (PFPeA)	100	105		ng/L		105	71 - 131
Perfluorohexanoic acid (PFHxA)	100	103		ng/L		103	73 - 133
Perfluoroheptanoic acid (PFHpA)	100	108		ng/L		108	72 - 132
Perfluorooctanoic acid (PFOA)	100	106		ng/L		106	70 - 130
Perfluorononanoic acid (PFNA)	100	115		ng/L		115	75 - 135
Perfluorodecanoic acid (PFDA)	100	110		ng/L		110	76 - 136
Perfluoroundecanoic acid (PFUnA)	100	105		ng/L		105	68 - 128
Perfluorododecanoic acid (PFDoA)	100	115		ng/L		115	71 - 131
Perfluorotridecanoic acid (PFTrDA)	100	112		ng/L		112	71 - 131
Perfluorotetradecanoic acid (PFTeA)	100	97.2		ng/L		97	70 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	105		ng/L		105	76 - 136
Perfluorobutanesulfonic acid (PFBS)	88.8	83.8		ng/L		94	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	94.0	93.4		ng/L		99	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	91.2	89.1		ng/L		98	59 - 119
Perfluoroheptanesulfonic acid (PFHpS)	95.4	106		ng/L		111	76 - 136
Perfluorooctanesulfonic acid (PFOS)	93.0	98.7		ng/L		106	70 - 130
Perfluorononanesulfonic acid (PFNS)	96.2	105		ng/L		109	75 - 135
Perfluorodecanesulfonic acid (PFDS)	96.4	109		ng/L		113	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	97.0	103		ng/L		106	67 - 127

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-709747/2-A

Matrix: Water

Analysis Batch: 710352

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 709747

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorooctanesulfonamide (FOSA)	100	80.7		ng/L		81	73 - 133
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	109		ng/L		109	76 - 136
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	104		ng/L		104	76 - 136
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	89.8		ng/L		96	79 - 139
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	88.0		ng/L		92	59 - 175
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	96.2		ng/L		100	75 - 135
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	96.6	90.2		ng/L		93	64 - 142
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	96.6		ng/L		103	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	115		ng/L		115	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	101		ng/L		107	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	104		ng/L		110	79 - 139
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	102		ng/L		102	70 - 130
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	84.4		ng/L		84	70 - 130
PFECHS	92.4	106		ng/L		114	70 - 130
PFPrS	92.0	90.8		ng/L		99	70 - 130
6:2 FTUCA	100	87.6		ng/L		88	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	89.6		ng/L		100	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	96.8		ng/L		97	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	113		ng/L		113	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	94.6		ng/L		95	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C8 FOSA	123		25 - 150
13C4 PFBA	104		25 - 150
13C5 PFPeA	106		25 - 150
13C2 PFHxA	104		25 - 150
13C4 PFHpA	113		25 - 150
13C4 PFOA	106		25 - 150
13C5 PFNA	103		25 - 150
13C2 PFDA	116		25 - 150
13C2 PFUnA	121		25 - 150
13C2 PFDoA	115		25 - 150

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-709747/2-A

Matrix: Water

Analysis Batch: 710352

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 709747

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C2 PFTeDA	124		25 - 150
13C2 PFHxDA	103		25 - 150
13C3 PFBS	111		25 - 150
18O2 PFHxS	117		25 - 150
13C4 PFOS	109		25 - 150
d5-NEtFOSAA	128		25 - 150
d3-NMeFOSAA	107		25 - 150
M2-4:2 FTS	107		25 - 150
M2-6:2 FTS	109		25 - 150
M2-8:2 FTS	129		25 - 150
13C3 HFPO-DA	93		25 - 150
13C-6:2 FTCA	106		25 - 150
13C-8:2 FTCA	115		25 - 150
13C2 10:2 FTS	166	*5+	25 - 150
13C-6:2 FTUCA	140		25 - 150

Lab Sample ID: LCSD 320-709747/3-A

Matrix: Water

Analysis Batch: 710352

Client Sample ID: Lab Control Sample Dup

Prep Type: Pre-Treatment

Prep Batch: 709747

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
Perfluorobutanoic acid (PFBA)	100	99.2		ng/L		99	76 - 136	4	30
Perfluoropentanoic acid (PFPeA)	100	104		ng/L		104	71 - 131	0	30
Perfluorohexanoic acid (PFHxA)	100	96.4		ng/L		96	73 - 133	7	30
Perfluoroheptanoic acid (PFHpA)	100	98.5		ng/L		99	72 - 132	9	30
Perfluorooctanoic acid (PFOA)	100	103		ng/L		103	70 - 130	2	30
Perfluorononanoic acid (PFNA)	100	104		ng/L		104	75 - 135	10	30
Perfluorodecanoic acid (PFDA)	100	99.7		ng/L		100	76 - 136	9	30
Perfluoroundecanoic acid (PFUnA)	100	101		ng/L		101	68 - 128	5	30
Perfluorododecanoic acid (PFDoA)	100	111		ng/L		111	71 - 131	3	30
Perfluorotridecanoic acid (PFTrDA)	100	112		ng/L		112	71 - 131	1	30
Perfluorotetradecanoic acid (PFTeA)	100	101		ng/L		101	70 - 130	4	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	131		ng/L		131	76 - 136	22	30
Perfluorobutanesulfonic acid (PFBS)	88.8	86.7		ng/L		98	67 - 127	3	30
Perfluoropentanesulfonic acid (PFPeS)	94.0	99.1		ng/L		105	66 - 126	6	30
Perfluorohexanesulfonic acid (PFHxS)	91.2	97.6		ng/L		107	59 - 119	9	30
Perfluoroheptanesulfonic acid (PFHpS)	95.4	101		ng/L		106	76 - 136	5	30
Perfluorooctanesulfonic acid (PFOS)	93.0	98.9		ng/L		106	70 - 130	0	30
Perfluorononanesulfonic acid (PFNS)	96.2	101		ng/L		105	75 - 135	4	30
Perfluorodecanesulfonic acid (PFDS)	96.4	109		ng/L		113	71 - 131	0	30

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-709747/3-A

Matrix: Water

Analysis Batch: 710352

Client Sample ID: Lab Control Sample Dup

Prep Type: Pre-Treatment

Prep Batch: 709747

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec	RPD	RPD
		Result	Qualifier				Limits		
Perfluorododecanesulfonic acid (PFDoS)	97.0	108		ng/L		112	67 - 127	5	30
Perfluorooctanesulfonamide (FOSA)	100	73.6		ng/L		74	73 - 133	9	30
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	105		ng/L		105	76 - 136	3	30
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	93.5		ng/L		93	76 - 136	10	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	104		ng/L		111	79 - 139	15	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	93.5		ng/L		98	59 - 175	6	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	112		ng/L		117	75 - 135	15	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	96.6	89.4		ng/L		93	64 - 142	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	96.8		ng/L		104	75 - 135	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	102		ng/L		102	51 - 173	12	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	100		ng/L		106	54 - 114	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	93.1		ng/L		98	79 - 139	11	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	86.6		ng/L		87	70 - 130	16	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	73.5		ng/L		73	70 - 130	14	30
PFECHS	92.4	107		ng/L		115	70 - 130	1	30
PFPoS	92.0	99.3		ng/L		108	70 - 130	9	30
6:2 FTUCA	100	80.6		ng/L		81	70 - 130	8	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	89.2	104		ng/L		117	70 - 130	15	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	90.8		ng/L		91	70 - 130	6	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	102		ng/L		102	70 - 130	10	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	84.5		ng/L		85	70 - 130	11	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	122		25 - 150
13C4 PFBA	98		25 - 150
13C5 PFPeA	98		25 - 150
13C2 PFHxA	100		25 - 150
13C4 PFHpA	105		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	106		25 - 150
13C2 PFDA	110		25 - 150
13C2 PFUnA	123		25 - 150

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-709747/3-A
Matrix: Water
Analysis Batch: 710352

Client Sample ID: Lab Control Sample Dup
Prep Type: Pre-Treatment
Prep Batch: 709747

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C2 PFDoA	120		25 - 150
13C2 PFTeDA	123		25 - 150
13C2 PFHxDA	80		25 - 150
13C3 PFBS	100		25 - 150
18O2 PFHxS	105		25 - 150
13C4 PFOS	104		25 - 150
d5-NEtFOSAA	136		25 - 150
d3-NMeFOSAA	119		25 - 150
M2-4:2 FTS	101		25 - 150
M2-6:2 FTS	106		25 - 150
M2-8:2 FTS	114		25 - 150
13C3 HFPO-DA	93		25 - 150
13C-6:2 FTCA	100		25 - 150
13C-8:2 FTCA	111		25 - 150
13C2 10:2 FTS	156	*5+	25 - 150
13C-6:2 FTUCA	134		25 - 150

Lab Sample ID: MB 320-707539/1-A
Matrix: Water
Analysis Batch: 708498

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 707539

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 21:49	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 21:49	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/19/23 21:34	09/22/23 21:49	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFPeA	97		25 - 150	09/19/23 21:34	09/22/23 21:49	1
13C2 PFHxA	101		25 - 150	09/19/23 21:34	09/22/23 21:49	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:34	09/22/23 21:49	1

Lab Sample ID: LCS 320-707539/2-A
Matrix: Water
Analysis Batch: 708498

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 707539

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	104		ng/L		104	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	74.6		ng/L		75	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	79.1		ng/L		79	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C5 PFPeA	97		25 - 150
13C2 PFHxA	95		25 - 150
M2-4:2 FTS	0		0 - 10

QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-707539/3-A
Matrix: Water
Analysis Batch: 708498

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 707539

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	116		ng/L		116	70 - 130	12	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	70.5		ng/L		71	70 - 130	6	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	67.4	*-	ng/L		67	70 - 130	16	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C5 PFPeA	95		25 - 150
13C2 PFHxA	108		25 - 150
M2-4:2 FTS	0		0 - 10

Lab Sample ID: MB 320-709748/1-A
Matrix: Water
Analysis Batch: 710353

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 709748

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	ND		13		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorotridecanoic acid (PFTTrDA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluoronanesulfonic acid (PFNS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L	09/28/23 21:59	10/02/23 15:54	1	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L	09/28/23 21:59	10/02/23 15:54	1	
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L	09/28/23 21:59	10/02/23 15:54	1	
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L	09/28/23 21:59	10/02/23 15:54	1	

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-709748/1-A

Matrix: Water

Analysis Batch: 710353

Client Sample ID: Method Blank

Prep Type: Post-Treatment

Prep Batch: 709748

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		09/28/23 21:59	10/02/23 15:54	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/28/23 21:59	10/02/23 15:54	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
6:2 FTUCA	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		5.0		ng/L		09/28/23 21:59	10/02/23 15:54	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 FOSA	116		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C4 PFBA	95		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C5 PFPeA	100		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C4 PFHpA	105		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C4 PFOA	98		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C2 PFUnA	114		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C2 PFDoA	110		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C2 PFTeDA	109		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C2 PFHxDA	87		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C3 PFBS	105		25 - 150	09/28/23 21:59	10/02/23 15:54	1
18O2 PFHxS	101		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C4 PFOS	101		25 - 150	09/28/23 21:59	10/02/23 15:54	1
d5-NEtFOSAA	124		25 - 150	09/28/23 21:59	10/02/23 15:54	1
d3-NMeFOSAA	99		25 - 150	09/28/23 21:59	10/02/23 15:54	1
M2-4:2 FTS	0		0 - 10	09/28/23 21:59	10/02/23 15:54	1
M2-6:2 FTS	87		25 - 150	09/28/23 21:59	10/02/23 15:54	1
M2-8:2 FTS	102		25 - 150	09/28/23 21:59	10/02/23 15:54	1
d-N-MeFOSA-M	35		25 - 150	09/28/23 21:59	10/02/23 15:54	1
d-N-EtFOSA-M	40		25 - 150	09/28/23 21:59	10/02/23 15:54	1
d7-N-MeFOSE-M	44		25 - 150	09/28/23 21:59	10/02/23 15:54	1
d9-N-EtFOSE-M	46		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C3 HFPO-DA	85		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C-6:2 FTCA	84		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C-8:2 FTCA	87		25 - 150	09/28/23 21:59	10/02/23 15:54	1
13C2 10:2 FTS	135		25 - 150	09/28/23 21:59	10/02/23 15:54	1

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-709748/1-A
Matrix: Water
Analysis Batch: 710353

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 709748

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C-6:2 FTUCA	121		25 - 150	09/28/23 21:59	10/02/23 15:54	1

Lab Sample ID: LCS 320-709748/2-A
Matrix: Water
Analysis Batch: 710353

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 709748

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanoic acid (PFPeA)	100	126		ng/L		126	85 - 145
Perfluorohexanoic acid (PFHxA)	100	141		ng/L		141	81 - 141
Perfluoroheptanoic acid (PFHpA)	100	164		ng/L		164	104 - 171
Perfluorooctanoic acid (PFOA)	100	287		ng/L		287	158 - 454
Perfluorononanoic acid (PFNA)	100	145	*+	ng/L		145	66 - 126
Perfluorodecanoic acid (PFDA)	100	148	*+	ng/L		148	65 - 125
Perfluoroundecanoic acid (PFUnA)	100	111		ng/L		111	57 - 117
Perfluorododecanoic acid (PFDoA)	100	116		ng/L		116	66 - 126
Perfluorotridecanoic acid (PFTrDA)	100	120		ng/L		120	65 - 136
Perfluorotetradecanoic acid (PFTeA)	100	108		ng/L		108	63 - 123
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	93.9		ng/L		94	47 - 107
Perfluoro-n-octadecanoic acid (PFODA)	100	78.1		ng/L		78	30 - 97
Perfluorobutanesulfonic acid (PFBS)	88.8	87.4		ng/L		98	75 - 135
Perfluoropentanesulfonic acid (PFPeS)	94.0	93.0		ng/L		99	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	91.2	99.4		ng/L		109	64 - 124
Perfluoroheptanesulfonic acid (PFHpS)	95.4	104		ng/L		109	70 - 131
Perfluorooctanesulfonic acid (PFOS)	93.0	103		ng/L		111	68 - 128
Perfluoronanesulfonic acid (PFNS)	96.2	103		ng/L		107	70 - 130
Perfluorodecanesulfonic acid (PFDS)	96.4	98.8		ng/L		102	66 - 126
Perfluorododecanesulfonic acid (PFDoS)	97.0	116		ng/L		120	67 - 127
Perfluorooctanesulfonamide (FOSA)	100	ND		ng/L		0	0 - 10
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	ND		ng/L		0	0 - 10
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	ND		ng/L		0	0 - 10
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	ND		ng/L		0	0 - 10
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	ND		ng/L		0	0 - 10

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-709748/2-A

Matrix: Water

Analysis Batch: 710353

Client Sample ID: Lab Control Sample

Prep Type: Post-Treatment

Prep Batch: 709748

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	ND		ng/L		0	0 - 10
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	96.6	ND		ng/L		0	0 - 10
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	ND		ng/L		0	0 - 10
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	ND		ng/L		0	0 - 10
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	ND		ng/L		0	0 - 10
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	ND		ng/L		0	0 - 10
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	89.4		ng/L		96	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	63.5		ng/L		63	51 - 173
11-Chloroeicosafluoro-3-oxadecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	66.1		ng/L		70	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	ND		ng/L		0	0 - 10
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	ND		ng/L		0	0 - 10
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	ND		ng/L		0	0 - 10
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	ND		ng/L		0	0 - 10
PFECHS	92.4	107		ng/L		115	70 - 130
PFPoS	92.0	96.1		ng/L		104	70 - 130
6:2 FTUCA	100	ND		ng/L		0	0 - 10
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	97.3		ng/L		109	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C8 FOSA	114		25 - 150
13C4 PFBA	91		25 - 150
13C5 PFPeA	94		25 - 150
13C4 PFHpA	102		25 - 150
13C4 PFOA	100		25 - 150
13C2 PFUnA	114		25 - 150
13C2 PFDoA	103		25 - 150
13C2 PFTeDA	104		25 - 150
13C2 PFHxDA	96		25 - 150
13C3 PFBS	103		25 - 150
18O2 PFHxS	104		25 - 150
13C4 PFOS	99		25 - 150
d5-NEtFOSAA	115		25 - 150
d3-NMeFOSAA	102		25 - 150
M2-4:2 FTS	0		0 - 10
M2-6:2 FTS	80		25 - 150
M2-8:2 FTS	93		25 - 150

QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-709748/2-A

Matrix: Water

Analysis Batch: 710353

Client Sample ID: Lab Control Sample

Prep Type: Post-Treatment

Prep Batch: 709748

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
d-N-MeFOSA-M	42		25 - 150
d-N-EtFOSA-M	41		25 - 150
d7-N-MeFOSE-M	40		25 - 150
d9-N-EtFOSE-M	37		25 - 150
13C3 HFPO-DA	84		25 - 150
13C-6:2 FTCA	96		25 - 150
13C-8:2 FTCA	95		25 - 150
13C2 10:2 FTS	113		25 - 150
13C-6:2 FTUCA	129		25 - 150

Lab Sample ID: LCSD 320-709748/3-A

Matrix: Water

Analysis Batch: 710353

Client Sample ID: Lab Control Sample Dup

Prep Type: Post-Treatment

Prep Batch: 709748

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD
									Limit
Perfluorobutanoic acid (PFBA)	100	111		ng/L		111	93 - 153	6	30
Perfluoropentanoic acid (PFPeA)	100	123		ng/L		123	85 - 145	2	30
Perfluorohexanoic acid (PFHxA)	100	156	*+	ng/L		156	81 - 141	10	30
Perfluoroheptanoic acid (PFHpA)	100	160		ng/L		160	104 - 171	2	30
Perfluorooctanoic acid (PFOA)	100	302		ng/L		302	158 - 454	5	30
Perfluorononanoic acid (PFNA)	100	152	*+	ng/L		152	66 - 126	4	30
Perfluorodecanoic acid (PFDA)	100	142	*+	ng/L		142	65 - 125	4	30
Perfluoroundecanoic acid (PFUnA)	100	113		ng/L		113	57 - 117	2	30
Perfluorododecanoic acid (PFDoA)	100	119		ng/L		119	66 - 126	2	30
Perfluorotridecanoic acid (PFTrDA)	100	121		ng/L		121	65 - 136	0	30
Perfluorotetradecanoic acid (PFTeA)	100	125	*+	ng/L		125	63 - 123	15	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	81.4		ng/L		81	47 - 107	14	30
Perfluoro-n-octadecanoic acid (PFODA)	100	95.1		ng/L		95	30 - 97	20	30
Perfluorobutanesulfonic acid (PFBS)	88.8	83.9		ng/L		94	75 - 135	4	30
Perfluoropentanesulfonic acid (PFPeS)	94.0	90.5		ng/L		96	70 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)	91.2	95.9		ng/L		105	64 - 124	4	30
Perfluoroheptanesulfonic acid (PFHpS)	95.4	106		ng/L		111	70 - 131	1	30
Perfluorooctanesulfonic acid (PFOS)	93.0	100		ng/L		108	68 - 128	3	30
Perfluorononanesulfonic acid (PFNS)	96.2	106		ng/L		110	70 - 130	2	30
Perfluorodecanesulfonic acid (PFDS)	96.4	82.6		ng/L		86	66 - 126	18	30
Perfluorododecanesulfonic acid (PFDoS)	97.0	116		ng/L		120	67 - 127	0	30
Perfluorooctanesulfonamide (FOSA)	100	ND		ng/L		0	0 - 10	NC	30

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-709748/3-A

Matrix: Water

Analysis Batch: 710353

Client Sample ID: Lab Control Sample Dup

Prep Type: Post-Treatment

Prep Batch: 709748

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec	RPD	RPD
		Result	Qualifier				Limits		
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	ND		ng/L		0	0 - 10	NC	30
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	ND		ng/L		0	0 - 10	NC	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	ND		ng/L		0	0 - 10	NC	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	ND		ng/L		0	0 - 10	NC	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	ND		ng/L		0	0 - 10	NC	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	96.6	ND		ng/L		0	0 - 10	NC	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	ND		ng/L		0	0 - 10	NC	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	ND		ng/L		0	0 - 10	NC	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	ND		ng/L		0	0 - 10	NC	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	ND		ng/L		0	0 - 10	NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	90.2		ng/L		97	75 - 135	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	63.3		ng/L		63	51 - 173	0	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	69.3		ng/L		73	54 - 114	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	ND		ng/L		0	0 - 10	NC	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	ND		ng/L		0	0 - 10	NC	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	ND		ng/L		0	0 - 10	NC	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	ND		ng/L		0	0 - 10	NC	30
PFECHS	92.4	108		ng/L		117	70 - 130	1	30
PFPPrS	92.0	95.9		ng/L		104	70 - 130	0	30
6:2 FTUCA	100	ND		ng/L		0	0 - 10	NC	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	89.2	96.2		ng/L		108	70 - 130	1	30

Isotope Dilution	LCSD	LCSD	Limits
	%Recovery	Qualifier	
13C8 FOSA	128		25 - 150
13C4 PFBA	98		25 - 150
13C5 PFPeA	108		25 - 150
13C4 PFHpA	120		25 - 150
13C4 PFOA	107		25 - 150
13C2 PFUnA	122		25 - 150
13C2 PFDoA	105		25 - 150
13C2 PFTeDA	103		25 - 150
13C2 PFHxDA	101		25 - 150

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-709748/3-A
Matrix: Water
Analysis Batch: 710353

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 709748

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C3 PFBS	115		25 - 150
18O2 PFHxS	115		25 - 150
13C4 PFOS	110		25 - 150
d5-NEtFOSAA	142		25 - 150
d3-NMeFOSAA	111		25 - 150
M2-4:2 FTS	0		0 - 10
M2-6:2 FTS	89		25 - 150
M2-8:2 FTS	107		25 - 150
d-N-MeFOSA-M	36		25 - 150
d-N-EtFOSA-M	37		25 - 150
d7-N-MeFOSE-M	44		25 - 150
d9-N-EtFOSE-M	43		25 - 150
13C3 HFPO-DA	99		25 - 150
13C-6:2 FTCA	105		25 - 150
13C-8:2 FTCA	109		25 - 150
13C2 10:2 FTS	124		25 - 150
13C-6:2 FTUCA	137		25 - 150

Method: ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography

Lab Sample ID: MB 410-426127/1-A
Matrix: Water
Analysis Batch: 427657

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 426127

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Adsorbable Organic Fluorine (AOF)	ND		2.0		ug/L		10/02/23 10:31	10/03/23 13:08	1

Lab Sample ID: LCS 410-426127/2-A
Matrix: Water
Analysis Batch: 427657

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 426127

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits

Lab Sample ID: LCSD 410-426127/3-A
Matrix: Water
Analysis Batch: 427657

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 426127

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
Adsorbable Organic Fluorine (AOF)	50.7	45.8		ug/L		90	50 - 150	2	20

Lab Sample ID: MB 410-427894/1-A
Matrix: Water
Analysis Batch: 428724

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 427894

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Adsorbable Organic Fluorine (AOF)	ND		2.0		ug/L		10/05/23 13:12	10/06/23 10:09	1

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QC Sample Results

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method: ELLE SOP - Total or Organic Fluorine by Combustion Ion Chromatography (Continued)

Lab Sample ID: LCS 410-427894/2-A
Matrix: Water
Analysis Batch: 428724

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 427894

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Adsorbable Organic Fluorine (AOF)	20.3	21.1		ug/L		104	50 - 150

Lab Sample ID: LCSD 410-427894/3-A
Matrix: Water
Analysis Batch: 428724

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 427894

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Adsorbable Organic Fluorine (AOF)	20.3	20.7		ug/L		102	50 - 150	2	20

Lab Sample ID: MB 410-429043/1-A
Matrix: Water
Analysis Batch: 429397

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 429043

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	ND		2.0		ug/L		10/09/23 13:39	10/09/23 14:16	1

Lab Sample ID: LCS 410-429043/2-A
Matrix: Water
Analysis Batch: 429397

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 429043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Adsorbable Organic Fluorine (AOF)	20.3	20.9		ug/L		103	50 - 150

Lab Sample ID: LCSD 410-429043/3-A
Matrix: Water
Analysis Batch: 429397

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 429043

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Adsorbable Organic Fluorine (AOF)	20.3	19.9		ug/L		98	50 - 150	4	20

QC Association Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

LCMS

Prep Batch: 426127

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-3	KHFTA-MW3	Total/NA	Water	NONE	
320-104763-4	KHFTA-MW4	Total/NA	Water	NONE	
320-104763-5	KHFTA-MW5	Total/NA	Water	NONE	
320-104763-6	KHFTA-MW7	Total/NA	Water	NONE	
MB 410-426127/1-A	Method Blank	Total/NA	Water	NONE	
LCS 410-426127/2-A	Lab Control Sample	Total/NA	Water	NONE	
LCSD 410-426127/3-A	Lab Control Sample Dup	Total/NA	Water	NONE	

Analysis Batch: 427657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-3	KHFTA-MW3	Total/NA	Water	ELLE SOP	426127
320-104763-4	KHFTA-MW4	Total/NA	Water	ELLE SOP	426127
320-104763-5	KHFTA-MW5	Total/NA	Water	ELLE SOP	426127
320-104763-6	KHFTA-MW7	Total/NA	Water	ELLE SOP	426127
MB 410-426127/1-A	Method Blank	Total/NA	Water	ELLE SOP	426127
LCS 410-426127/2-A	Lab Control Sample	Total/NA	Water	ELLE SOP	426127
LCSD 410-426127/3-A	Lab Control Sample Dup	Total/NA	Water	ELLE SOP	426127

Prep Batch: 427894

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1	KHFTA-MW1	Total/NA	Water	NONE	
320-104763-2	KHFTA-MW2	Total/NA	Water	NONE	
320-104763-8	KHFTA-MW9	Total/NA	Water	NONE	
MB 410-427894/1-A	Method Blank	Total/NA	Water	NONE	
LCS 410-427894/2-A	Lab Control Sample	Total/NA	Water	NONE	
LCSD 410-427894/3-A	Lab Control Sample Dup	Total/NA	Water	NONE	

Analysis Batch: 428724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1	KHFTA-MW1	Total/NA	Water	ELLE SOP	427894
320-104763-2	KHFTA-MW2	Total/NA	Water	ELLE SOP	427894
320-104763-8	KHFTA-MW9	Total/NA	Water	ELLE SOP	427894
MB 410-427894/1-A	Method Blank	Total/NA	Water	ELLE SOP	427894
LCS 410-427894/2-A	Lab Control Sample	Total/NA	Water	ELLE SOP	427894
LCSD 410-427894/3-A	Lab Control Sample Dup	Total/NA	Water	ELLE SOP	427894

Prep Batch: 429043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-7	KHFTA-MW8	Total/NA	Water	NONE	
320-104763-9	KHFTA-MW11	Total/NA	Water	NONE	
320-104763-10	KHFTA-EB#1	Total/NA	Water	NONE	
MB 410-429043/1-A	Method Blank	Total/NA	Water	NONE	
LCS 410-429043/2-A	Lab Control Sample	Total/NA	Water	NONE	
LCSD 410-429043/3-A	Lab Control Sample Dup	Total/NA	Water	NONE	

Analysis Batch: 429397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-7	KHFTA-MW8	Total/NA	Water	ELLE SOP	429043
320-104763-9	KHFTA-MW11	Total/NA	Water	ELLE SOP	429043
320-104763-10	KHFTA-EB#1	Total/NA	Water	ELLE SOP	429043
MB 410-429043/1-A	Method Blank	Total/NA	Water	ELLE SOP	429043

QC Association Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

LCMS (Continued)

Analysis Batch: 429397 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 410-429043/2-A	Lab Control Sample	Total/NA	Water	ELLE SOP	429043
LCSD 410-429043/3-A	Lab Control Sample Dup	Total/NA	Water	ELLE SOP	429043

Prep Batch: 707539

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1	KHFTA-MW1	Post-Treatment	Water	TOP Post Prep	
320-104763-2	KHFTA-MW2	Post-Treatment	Water	TOP Post Prep	
320-104763-3	KHFTA-MW3	Post-Treatment	Water	TOP Post Prep	
320-104763-4	KHFTA-MW4	Post-Treatment	Water	TOP Post Prep	
320-104763-5	KHFTA-MW5	Post-Treatment	Water	TOP Post Prep	
320-104763-6	KHFTA-MW7	Post-Treatment	Water	TOP Post Prep	
320-104763-7	KHFTA-MW8	Post-Treatment	Water	TOP Post Prep	
320-104763-8	KHFTA-MW9	Post-Treatment	Water	TOP Post Prep	
320-104763-9	KHFTA-MW11	Post-Treatment	Water	TOP Post Prep	
320-104763-10	KHFTA-EB#1	Post-Treatment	Water	TOP Post Prep	
MB 320-707539/1-A	Method Blank	Post-Treatment	Water	TOP Post Prep	
LCS 320-707539/2-A	Lab Control Sample	Post-Treatment	Water	TOP Post Prep	
LCSD 320-707539/3-A	Lab Control Sample Dup	Post-Treatment	Water	TOP Post Prep	

Prep Batch: 707545

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1 - DL	KHFTA-MW1	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-2 - DL	KHFTA-MW2	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-3 - DL	KHFTA-MW3	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-4 - DL	KHFTA-MW4	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-5 - DL	KHFTA-MW5	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-6	KHFTA-MW7	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-6 - DL	KHFTA-MW7	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-7	KHFTA-MW8	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-8	KHFTA-MW9	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-8 - DL	KHFTA-MW9	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-9	KHFTA-MW11	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-10	KHFTA-EB#1	Pre-Treatment	Water	TOP Pre - Prep	
MB 320-707545/1-A	Method Blank	Pre-Treatment	Water	TOP Pre - Prep	
LCS 320-707545/2-A	Lab Control Sample	Pre-Treatment	Water	TOP Pre - Prep	
LCSD 320-707545/3-A	Lab Control Sample Dup	Pre-Treatment	Water	TOP Pre - Prep	

Analysis Batch: 708498

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1	KHFTA-MW1	Post-Treatment	Water	537 (modified)	707539
320-104763-2	KHFTA-MW2	Post-Treatment	Water	537 (modified)	707539
320-104763-3	KHFTA-MW3	Post-Treatment	Water	537 (modified)	707539
320-104763-4	KHFTA-MW4	Post-Treatment	Water	537 (modified)	707539
320-104763-5	KHFTA-MW5	Post-Treatment	Water	537 (modified)	707539
320-104763-6	KHFTA-MW7	Post-Treatment	Water	537 (modified)	707539
320-104763-6	KHFTA-MW7	Pre-Treatment	Water	537 (modified)	707545
320-104763-7	KHFTA-MW8	Post-Treatment	Water	537 (modified)	707539
320-104763-7	KHFTA-MW8	Pre-Treatment	Water	537 (modified)	707545
320-104763-8	KHFTA-MW9	Post-Treatment	Water	537 (modified)	707539
320-104763-8	KHFTA-MW9	Pre-Treatment	Water	537 (modified)	707545
320-104763-9	KHFTA-MW11	Post-Treatment	Water	537 (modified)	707539

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QC Association Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

LCMS (Continued)

Analysis Batch: 708498 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-9	KHFTA-MW11	Pre-Treatment	Water	537 (modified)	707545
320-104763-10	KHFTA-EB#1	Post-Treatment	Water	537 (modified)	707539
320-104763-10	KHFTA-EB#1	Pre-Treatment	Water	537 (modified)	707545
MB 320-707539/1-A	Method Blank	Post-Treatment	Water	537 (modified)	707539
MB 320-707545/1-A	Method Blank	Pre-Treatment	Water	537 (modified)	707545
LCS 320-707539/2-A	Lab Control Sample	Post-Treatment	Water	537 (modified)	707539
LCS 320-707545/2-A	Lab Control Sample	Pre-Treatment	Water	537 (modified)	707545
LCSD 320-707539/3-A	Lab Control Sample Dup	Post-Treatment	Water	537 (modified)	707539
LCSD 320-707545/3-A	Lab Control Sample Dup	Pre-Treatment	Water	537 (modified)	707545

Analysis Batch: 709704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-8 - DL	KHFTA-MW9	Pre-Treatment	Water	537 (modified)	707545

Prep Batch: 709747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1 - RE	KHFTA-MW1	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-2 - RE	KHFTA-MW2	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-3 - RE	KHFTA-MW3	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-4 - RE	KHFTA-MW4	Pre-Treatment	Water	TOP Pre - Prep	
320-104763-5 - RE	KHFTA-MW5	Pre-Treatment	Water	TOP Pre - Prep	
MB 320-709747/1-A	Method Blank	Pre-Treatment	Water	TOP Pre - Prep	
LCS 320-709747/2-A	Lab Control Sample	Pre-Treatment	Water	TOP Pre - Prep	
LCSD 320-709747/3-A	Lab Control Sample Dup	Pre-Treatment	Water	TOP Pre - Prep	

Prep Batch: 709748

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1 - RE	KHFTA-MW1	Post-Treatment	Water	TOP Post Prep	
320-104763-2 - RE	KHFTA-MW2	Post-Treatment	Water	TOP Post Prep	
320-104763-3 - RE	KHFTA-MW3	Post-Treatment	Water	TOP Post Prep	
320-104763-4 - RE	KHFTA-MW4	Post-Treatment	Water	TOP Post Prep	
320-104763-5 - RE	KHFTA-MW5	Post-Treatment	Water	TOP Post Prep	
320-104763-6 - RE	KHFTA-MW7	Post-Treatment	Water	TOP Post Prep	
320-104763-8 - RE	KHFTA-MW9	Post-Treatment	Water	TOP Post Prep	
320-104763-10 - RE	KHFTA-EB#1	Post-Treatment	Water	TOP Post Prep	
MB 320-709748/1-A	Method Blank	Post-Treatment	Water	TOP Post Prep	
LCS 320-709748/2-A	Lab Control Sample	Post-Treatment	Water	TOP Post Prep	
LCSD 320-709748/3-A	Lab Control Sample Dup	Post-Treatment	Water	TOP Post Prep	

Analysis Batch: 710352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-709747/1-A	Method Blank	Pre-Treatment	Water	537 (modified)	709747
LCS 320-709747/2-A	Lab Control Sample	Pre-Treatment	Water	537 (modified)	709747
LCSD 320-709747/3-A	Lab Control Sample Dup	Pre-Treatment	Water	537 (modified)	709747

Analysis Batch: 710353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-8 - RE	KHFTA-MW9	Post-Treatment	Water	537 (modified)	709748
320-104763-10 - RE	KHFTA-EB#1	Post-Treatment	Water	537 (modified)	709748
MB 320-709748/1-A	Method Blank	Post-Treatment	Water	537 (modified)	709748
LCS 320-709748/2-A	Lab Control Sample	Post-Treatment	Water	537 (modified)	709748

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QC Association Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

LCMS (Continued)

Analysis Batch: 710353 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-709748/3-A	Lab Control Sample Dup	Post-Treatment	Water	537 (modified)	709748

Analysis Batch: 710678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1 - RE	KHFTA-MW1	Pre-Treatment	Water	537 (modified)	709747
320-104763-1 - DL	KHFTA-MW1	Pre-Treatment	Water	537 (modified)	707545
320-104763-2 - RE	KHFTA-MW2	Pre-Treatment	Water	537 (modified)	709747
320-104763-2 - DL	KHFTA-MW2	Pre-Treatment	Water	537 (modified)	707545
320-104763-3 - RE	KHFTA-MW3	Pre-Treatment	Water	537 (modified)	709747
320-104763-3 - DL	KHFTA-MW3	Pre-Treatment	Water	537 (modified)	707545
320-104763-4 - RE	KHFTA-MW4	Pre-Treatment	Water	537 (modified)	709747
320-104763-4 - DL	KHFTA-MW4	Pre-Treatment	Water	537 (modified)	707545
320-104763-5 - RE	KHFTA-MW5	Pre-Treatment	Water	537 (modified)	709747
320-104763-5 - DL	KHFTA-MW5	Pre-Treatment	Water	537 (modified)	707545
320-104763-6 - DL	KHFTA-MW7	Pre-Treatment	Water	537 (modified)	707545

Analysis Batch: 711630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104763-1 - RE	KHFTA-MW1	Post-Treatment	Water	537 (modified)	709748
320-104763-2 - RE	KHFTA-MW2	Post-Treatment	Water	537 (modified)	709748
320-104763-3 - RE	KHFTA-MW3	Post-Treatment	Water	537 (modified)	709748
320-104763-4 - RE	KHFTA-MW4	Post-Treatment	Water	537 (modified)	709748
320-104763-5 - RE	KHFTA-MW5	Post-Treatment	Water	537 (modified)	709748
320-104763-6 - RE	KHFTA-MW7	Post-Treatment	Water	537 (modified)	709748

Lab Chronicle

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW1

Lab Sample ID: 320-104763-1

Date Collected: 09/06/23 12:45

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 22:23	D1R	EET SAC
Post-Treatment	Prep	TOP Post Prep	RE		1.0 mL	10.0 mL	709748	09/28/23 21:59	JER	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	711630	10/08/23 16:50	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	RE		1.0 mL	10.0 mL	709747	09/28/23 21:33	JER	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	710678	10/03/23 19:56	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	DL		100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	100	1 mL	1 mL	710678	10/03/23 21:03	D1R	EET SAC
Total/NA	Prep	NONE			1 mL	0.2 mL	427894	10/05/23 13:12	QLP7	ELLE
Total/NA	Analysis	ELLE SOP		1			428724	10/06/23 12:53	F9DU	ELLE

Client Sample ID: KHFTA-MW2

Lab Sample ID: 320-104763-2

Date Collected: 09/06/23 13:00

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 22:34	D1R	EET SAC
Post-Treatment	Prep	TOP Post Prep	RE		1.0 mL	10.0 mL	709748	09/28/23 21:59	JER	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	711630	10/08/23 17:01	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	RE		1.0 mL	10.0 mL	709747	09/28/23 21:33	JER	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	710678	10/03/23 20:07	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	DL		100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	100	1 mL	1 mL	710678	10/03/23 21:14	D1R	EET SAC
Total/NA	Prep	NONE			1 mL	0.2 mL	427894	10/05/23 13:12	QLP7	ELLE
Total/NA	Analysis	ELLE SOP		1			428724	10/06/23 13:59	F9DU	ELLE

Client Sample ID: KHFTA-MW3

Lab Sample ID: 320-104763-3

Date Collected: 09/06/23 11:53

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 22:45	D1R	EET SAC
Post-Treatment	Prep	TOP Post Prep	RE		1.0 mL	10.0 mL	709748	09/28/23 21:59	JER	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	711630	10/08/23 17:13	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	RE		1.0 mL	10.0 mL	709747	09/28/23 21:33	JER	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	10	1 mL	1 mL	710678	10/03/23 19:34	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	DL		100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	100	1 mL	1 mL	710678	10/03/23 21:26	D1R	EET SAC
Total/NA	Prep	NONE			5 mL	0.2 mL	426127	10/02/23 10:31	QLP7	ELLE
Total/NA	Analysis	ELLE SOP		1			427657	10/03/23 22:58	QLP7	ELLE

Lab Chronicle

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW4

Lab Sample ID: 320-104763-4

Date Collected: 09/06/23 12:20

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 22:56	D1R	EET SAC
Post-Treatment	Prep	TOP Post Prep	RE		5.0 mL	10.0 mL	709748	09/28/23 21:59	JER	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	711630	10/08/23 17:24	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	RE		5.0 mL	10.0 mL	709747	09/28/23 21:33	JER	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	710678	10/03/23 20:18	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	DL		100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	100	1 mL	1 mL	710678	10/03/23 21:37	D1R	EET SAC
Total/NA	Prep	NONE			5 mL	0.2 mL	426127	10/02/23 10:31	QLP7	ELLE
Total/NA	Analysis	ELLE SOP		1			427657	10/04/23 00:04	QLP7	ELLE

Client Sample ID: KHFTA-MW5

Lab Sample ID: 320-104763-5

Date Collected: 09/06/23 12:35

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 23:07	D1R	EET SAC
Post-Treatment	Prep	TOP Post Prep	RE		5.0 mL	10.0 mL	709748	09/28/23 21:59	JER	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	711630	10/08/23 17:35	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	RE		5.0 mL	10.0 mL	709747	09/28/23 21:33	JER	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	710678	10/03/23 20:41	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	DL		100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	100	1 mL	1 mL	710678	10/03/23 21:48	D1R	EET SAC
Total/NA	Prep	NONE			5 mL	0.2 mL	426127	10/02/23 10:31	QLP7	ELLE
Total/NA	Analysis	ELLE SOP		1			427657	10/04/23 01:09	QLP7	ELLE

Client Sample ID: KHFTA-MW7

Lab Sample ID: 320-104763-6

Date Collected: 09/06/23 14:15

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 23:19	D1R	EET SAC
Post-Treatment	Prep	TOP Post Prep	RE		5.0 mL	10.0 mL	709748	09/28/23 21:59	JER	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	20	1 mL	1 mL	711630	10/08/23 17:46	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep			100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 20:20	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	DL		100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	100	1 mL	1 mL	710678	10/03/23 21:59	D1R	EET SAC
Total/NA	Prep	NONE			5 mL	0.2 mL	426127	10/02/23 10:31	QLP7	ELLE
Total/NA	Analysis	ELLE SOP		1			427657	10/04/23 02:15	QLP7	ELLE

Lab Chronicle

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-MW8

Lab Sample ID: 320-104763-7

Date Collected: 09/06/23 13:15

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 23:30	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep			100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 20:31	D1R	EET SAC
Total/NA	Prep	NONE			100 mL	0.2 mL	429043	10/09/23 13:39	F9DU	ELLE
Total/NA	Analysis	ELLE SOP		1			429397	10/09/23 18:58	F9DU	ELLE

Client Sample ID: KHFTA-MW9

Lab Sample ID: 320-104763-8

Date Collected: 09/06/23 10:15

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 23:52	D1R	EET SAC
Post-Treatment	Prep	TOP Post Prep	RE		1.0 mL	10.0 mL	709748	09/28/23 21:59	JER	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	710353	10/02/23 17:57	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep			100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 20:53	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep	DL		100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	10	1 mL	1 mL	709704	09/29/23 06:14	D1R	EET SAC
Total/NA	Prep	NONE			20 mL	0.2 mL	427894	10/05/23 13:12	QLP7	ELLE
Total/NA	Analysis	ELLE SOP		1			428724	10/06/23 16:10	F9DU	ELLE

Client Sample ID: KHFTA-MW11

Lab Sample ID: 320-104763-9

Date Collected: 09/06/23 10:40

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/23/23 00:03	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep			100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 21:04	D1R	EET SAC
Total/NA	Prep	NONE			100 mL	0.2 mL	429043	10/09/23 13:39	F9DU	ELLE
Total/NA	Analysis	ELLE SOP		1			429397	10/09/23 20:09	F9DU	ELLE

Client Sample ID: KHFTA-EB#1

Lab Sample ID: 320-104763-10

Date Collected: 09/06/23 12:30

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			100.0 mL	10.0 mL	707539	09/19/23 21:34	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/23/23 00:14	D1R	EET SAC
Post-Treatment	Prep	TOP Post Prep	RE		1.0 mL	10.0 mL	709748	09/28/23 21:59	JER	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	710353	10/02/23 18:19	D1R	EET SAC

Eurofins Sacramento

Lab Chronicle

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Client Sample ID: KHFTA-EB#1

Lab Sample ID: 320-104763-10

Date Collected: 09/06/23 12:30

Matrix: Water

Date Received: 09/12/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Pre-Treatment	Prep	TOP Pre - Prep			100.0 mL	10.0 mL	707545	09/19/23 23:09	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708498	09/22/23 21:16	D1R	EET SAC
Total/NA	Prep	NONE			100 mL	0.2 mL	429043	10/09/23 13:39	F9DU	ELLE
Total/NA	Analysis	ELLE SOP		1			429397	10/09/23 16:37	F9DU	ELLE

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



Accreditation/Certification Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Laboratory: Eurofins Sacramento

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

Authority	Program	Identification Number	Expiration Date
Hawaii	State	<cert No.>	01-29-24

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
537 (modified)	TOP Post Prep	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537 (modified)	TOP Post Prep	Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
537 (modified)	TOP Post Prep	Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
537 (modified)	TOP Post Prep	Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
537 (modified)	TOP Post Prep	Water	3-Perfluoroheptylpropanoic acid (7:3 FTCA)
537 (modified)	TOP Post Prep	Water	3-Perfluoropentylpropanoic acid (5:3 FTCA)
537 (modified)	TOP Post Prep	Water	3-Perfluoropropylpropanoic acid (3:3 FTCA)
537 (modified)	TOP Post Prep	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537 (modified)	TOP Post Prep	Water	6:2 FTUCA
537 (modified)	TOP Post Prep	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)
537 (modified)	TOP Post Prep	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537 (modified)	TOP Post Prep	Water	N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	TOP Post Prep	Water	N-ethylperfluorooctane sulfonamide (NEtFOSA)
537 (modified)	TOP Post Prep	Water	N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)
537 (modified)	TOP Post Prep	Water	N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	TOP Post Prep	Water	N-methylperfluorooctane sulfonamide (NMeFOSA)
537 (modified)	TOP Post Prep	Water	N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)
537 (modified)	TOP Post Prep	Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
537 (modified)	TOP Post Prep	Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)
537 (modified)	TOP Post Prep	Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
537 (modified)	TOP Post Prep	Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
537 (modified)	TOP Post Prep	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	TOP Post Prep	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	TOP Post Prep	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	TOP Post Prep	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	TOP Post Prep	Water	Perfluorododecanesulfonic acid (PFDoS)
537 (modified)	TOP Post Prep	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	TOP Post Prep	Water	Perfluoroheptanesulfonic acid (PFHpS)
537 (modified)	TOP Post Prep	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	TOP Post Prep	Water	Perfluorohexanesulfonic acid (PFHxS)

Accreditation/Certification Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Laboratory: Eurofins Sacramento (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
537 (modified)	TOP Post Prep	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	TOP Post Prep	Water	Perfluorononanesulfonic acid (PFNS)
537 (modified)	TOP Post Prep	Water	Perfluorononanoic acid (PFNA)
537 (modified)	TOP Post Prep	Water	Perfluorooctanesulfonamide (FOSA)
537 (modified)	TOP Post Prep	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	TOP Post Prep	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	TOP Post Prep	Water	Perfluoropentanesulfonic acid (PFPeS)
537 (modified)	TOP Post Prep	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	TOP Post Prep	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	TOP Post Prep	Water	Perfluorotridecanoic acid (PFTrDA)
537 (modified)	TOP Post Prep	Water	Perfluoroundecanoic acid (PFUnA)
537 (modified)	TOP Pre - Prep	Water	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537 (modified)	TOP Pre - Prep	Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
537 (modified)	TOP Pre - Prep	Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
537 (modified)	TOP Pre - Prep	Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
537 (modified)	TOP Pre - Prep	Water	3-Perfluoroheptylpropanoic acid (7:3 FTCA)
537 (modified)	TOP Pre - Prep	Water	3-Perfluoropentylpropanoic acid (5:3 FTCA)
537 (modified)	TOP Pre - Prep	Water	3-Perfluoropropylpropanoic acid (3:3 FTCA)
537 (modified)	TOP Pre - Prep	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537 (modified)	TOP Pre - Prep	Water	6:2 FTUCA
537 (modified)	TOP Pre - Prep	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)
537 (modified)	TOP Pre - Prep	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537 (modified)	TOP Pre - Prep	Water	N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	TOP Pre - Prep	Water	N-ethylperfluorooctane sulfonamide (NEtFOSA)
537 (modified)	TOP Pre - Prep	Water	N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)
537 (modified)	TOP Pre - Prep	Water	N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	TOP Pre - Prep	Water	N-methylperfluorooctane sulfonamide (NMeFOSA)
537 (modified)	TOP Pre - Prep	Water	N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)
537 (modified)	TOP Pre - Prep	Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
537 (modified)	TOP Pre - Prep	Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)
537 (modified)	TOP Pre - Prep	Water	Perfluoro-3-methoxypropanoic acid (PFMPA)

Accreditation/Certification Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Laboratory: Eurofins Sacramento (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
537 (modified)	TOP Pre - Prep	Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
537 (modified)	TOP Pre - Prep	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	TOP Pre - Prep	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	TOP Pre - Prep	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	TOP Pre - Prep	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	TOP Pre - Prep	Water	Perfluorododecanesulfonic acid (PFDoS)
537 (modified)	TOP Pre - Prep	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	TOP Pre - Prep	Water	Perfluoroheptanesulfonic acid (PFHpS)
537 (modified)	TOP Pre - Prep	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	TOP Pre - Prep	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	TOP Pre - Prep	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	TOP Pre - Prep	Water	Perfluorononanesulfonic acid (PFNS)
537 (modified)	TOP Pre - Prep	Water	Perfluorononanoic acid (PFNA)
537 (modified)	TOP Pre - Prep	Water	Perfluorooctanesulfonamide (FOSA)
537 (modified)	TOP Pre - Prep	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	TOP Pre - Prep	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	TOP Pre - Prep	Water	Perfluoropentanesulfonic acid (PFPeS)
537 (modified)	TOP Pre - Prep	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	TOP Pre - Prep	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	TOP Pre - Prep	Water	Perfluorotridecanoic acid (PFTrDA)
537 (modified)	TOP Pre - Prep	Water	Perfluoroundecanoic acid (PFUnA)

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-30-24
A2LA	ISO/IEC 17025	0001.01	11-30-24
Alabama	State	43200	01-31-24
Alaska	State	PA00009	10-19-23
Alaska (UST)	State	17-027	02-28-24
Arizona	State	AZ0780	03-12-24
Arkansas DEQ	State	88-00660	08-09-24
California	State	2792	11-06-23
Colorado	State	PA00009	06-30-24
Connecticut	State	PH-0746	06-30-25
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-24
Delaware (DW)	State	N/A	01-31-24
Florida	NELAP	E87997	06-30-24
Georgia (DW)	State	C048	01-31-24
Hawaii	State	N/A	01-31-24
Illinois	NELAP	200027	01-31-24
Iowa	State	361	03-01-24
Kansas	NELAP	E-10151	10-31-23
Kentucky (DW)	State	KY90088	12-31-23
Kentucky (UST)	State	0001.01	11-30-24

Accreditation/Certification Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Kentucky (WW)	State	KY90088	12-31-23
Louisiana (All)	NELAP	02055	06-30-24
Maine	State	2019012	03-12-25
Maryland	State	100	06-30-24
Massachusetts	State	M-PA009	06-30-24
Michigan	State	9930	01-31-24
Minnesota	NELAP	042-999-487	12-31-23
Mississippi	State	023	01-31-24
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-24
Nebraska	State	NE-OS-32-17	01-31-24
New Hampshire	NELAP	2730	01-10-24
New Jersey	NELAP	PA011	06-30-24
New York	NELAP	10670	04-01-24
North Carolina (DW)	State	42705	07-31-24
North Carolina (WW/SW)	State	521	11-08-23
North Dakota	State	R-205	01-31-24
Oklahoma	NELAP	9804	08-31-24
Oregon	NELAP	PA200001	09-11-24
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	01-31-24
Rhode Island	State	LAO00338	12-31-23
South Carolina	State	89002	01-31-24
Tennessee	State	02838	01-31-24
Texas	NELAP	T104704194-23-46	08-31-24
USDA	US Federal Programs	525-22-298-19481	10-25-25
Vermont	State	VT - 36037	10-27-23
Virginia	NELAP	460182	06-14-25
Washington	State	C457	10-24-23
West Virginia (DW)	State	9906 C	12-31-23
West Virginia DEP	State	055	07-31-24
Wyoming	State	8TMS-L	01-31-24
Wyoming (UST)	A2LA	0001.01	11-30-24

Method Summary

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
ELLE SOP	Total or Organic Fluorine by Combustion Ion Chromatography	ELLE - Lancaster	ELLE
NONE	Preparation, Fluorine	ELLE - Lancaster	ELLE
TOP Post Prep	Solid-Phase Extraction (SPE)	SW846	EET SAC
TOP Pre - Prep	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

ELLE - Lancaster = Eurofins Lancaster, Facility Standard Operating Procedure.

EPA = US Environmental Protection Agency

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

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: Hawaii Department of Health
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104763-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-104763-1	KHFTA-MW1	Water	09/06/23 12:45	09/12/23 09:30
320-104763-2	KHFTA-MW2	Water	09/06/23 13:00	09/12/23 09:30
320-104763-3	KHFTA-MW3	Water	09/06/23 11:53	09/12/23 09:30
320-104763-4	KHFTA-MW4	Water	09/06/23 12:20	09/12/23 09:30
320-104763-5	KHFTA-MW5	Water	09/06/23 12:35	09/12/23 09:30
320-104763-6	KHFTA-MW7	Water	09/06/23 14:15	09/12/23 09:30
320-104763-7	KHFTA-MW8	Water	09/06/23 13:15	09/12/23 09:30
320-104763-8	KHFTA-MW9	Water	09/06/23 10:15	09/12/23 09:30
320-104763-9	KHFTA-MW11	Water	09/06/23 10:40	09/12/23 09:30
320-104763-10	KHFTA-EB#1	Water	09/06/23 12:30	09/12/23 09:30

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- 14
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Login Sample Receipt Checklist

Client: Hawaii Department of Health

Job Number: 320-104763-1

Login Number: 104763

List Source: Eurofins Sacramento

List Number: 1

Creator: Medeiros, Ryan M

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	N/A	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	N/A	
Cooler Temperature is recorded.	N/A	
COC is present.	N/A	
COC is filled out in ink and legible.	N/A	
COC is filled out with all pertinent information.	N/A	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	N/A	
Samples are received within Holding Time (excluding tests with immediate HTs)	N/A	
Sample containers have legible labels.	N/A	
Containers are not broken or leaking.	N/A	
Sample collection date/times are provided.	N/A	
Appropriate sample containers are used.	N/A	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	N/A	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: Hawaii Department of Health

Job Number: 320-104763-1

Login Number: 104763

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

List Number: 2

List Creation: 09/20/23 04:30 PM

Creator: Roth, Stephanie

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	