



ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

Kahalui Fire Training Pit Study

JOB NUMBER

320-104757-1

Eurofins Sacramento

Job Notes

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Authorization



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Definitions/Glossary

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

Job ID: 320-104757-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
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
Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104757-1

Job ID: 320-104757-1

Laboratory: Eurofins Sacramento

Narrative

Comments

Sample KFTA-DU5A SPLP Leachate (320-104757-6) was created to report the SPLP AOF & NTA results.

Sample SPLP lab blank (320-104757-7) was created to report the blank water results for SPLP AOF.

As requested, sample KFTA-DU5A was done in triplicate for TOPS & for SPLP TOPS. The duplicate and triplicate results are reported under samples 2 & 3.

Per project requirements, an approximate starting sample size of 10 grams was used for the samples.

The suffixes of SPLP IN2 & IN3 represent the SPLP Post TOPS results.

The suffix of SPLP RE3 represents the SPLP Pre TOPS results.

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 5.7° C.

Receipt Exceptions

No sampling dates or time were listed on the sample containers.

LCMS

Method 537 (modified): The continuing calibration verification internal standard (CCVIS) associated with batch 320-709674 recovered above the upper control limit for N-ethylperfluorooctane sulfonamide (NEtFOSA). The sample results associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported.

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. KFTA-DU5A (320-104757-1), KFTA-DU5A DUPLICATE (320-104757-2), KFTA-DU5A TRIPLICATE (320-104757-3), KFTA-DU5B (320-104757-4), KFTA-DU5C (320-104757-5), (LCS 320-707542/2-A), (LCS 320-707730/2-A), (LCSD 320-707542/3-A), (LCSD 320-707730/3-A), (MB 320-707542/1-A), (MB 320-707730/1-A), (LCS 320-716086/2-A), (LCSD 320-716086/3-A), (MB 320-716086/1-A), (LB 320-716086/4-A), (MB 320-713698/1-A), (LCS 320-713698/2-A), & (LCSD 320-713698/3-A). Some SPLP results for samples KFTA-DU5A (320-104757-1), KFTA-DU5A DUPLICATE (320-104757-2), & KFTA-DU5A TRIPLICATE (320-104757-3) had incomplete oxidation due to matrix issues.

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 320-707542/2-A), (LCS 320-707730/2-A), (LCSD 320-707542/3-A), (LCSD 320-707730/3-A), (LCS 320-716086/2-A), (LCSD 320-716086/3-A), (LCS 320-713698/2-A), & (LCSD 320-713698/3-A).

Method 537 (modified): Some results for samples KFTA-DU5A (320-104757-1), KFTA-DU5A DUPLICATE (320-104757-2), KFTA-DU5A TRIPLICATE (320-104757-3), KFTA-DU5B (320-104757-4) and KFTA-DU5C (320-104757-5) 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): The RPD of the laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-707544 and analytical batch 320-708499 recovered outside control limits for the following analyte: N-methylperfluorooctane

Case Narrative

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

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Laboratory: Eurofins Sacramento (Continued)

sulfonamide (NMeFOSA).

Method 537 (modified): The transition mass ratio was outside of the established ratio limit for N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE) in the CCVL (320-716978/5) associated with this data set, as indicated by the "R" flag in the raw data. The analyte response is in control in the CCVL there is no adverse impact on reported results.

Method 537 (modified): The laboratory control sample (LCS) and laboratory control sample duplicate (LCS D) for preparation batch 320-716087 and analytical batch 320-716979 recovered outside control limits for some or all of the following analytes: 3-Perfluoropentylpropanoic acid (5:3 FTCA), 3-Perfluoroheptylpropanoic acid (7:3 FTCA) and 11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS). These analytes were biased high in the LCSs and were not detected in the associated samples; therefore, the data have been reported.

Method 537 (modified): One or more Isotope Dilution Analyte (IDA) recoveries associated with the following samples are below the method recommended limit: KFTA-DU5A DUPLICATE (320-104757-2) & (LCS 320-707544/2-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDAs for these samples.

Method 537 (modified): The IDA recovery limits for the IDA M2-4:2 FTS in the CCVIS and CCB are 25 to 150%. (CCB 320-708499/1) and (CCVIS 320-708499/3)

Method ELLE SOP: Reporting limits were raised for the following samples due to interference from the sample matrix. KTTA-DU5A SPLP LEACHATE (320-104757-6)

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

Organic Prep

Method TOP Pre and Post Prep: A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: samples were extracted initially using a 10 g sample aliquot to meet client requirements for sample preparation mass. The resulting extract was split to yield 1 g sample equivalents for use in subsequent Pre and Post TOP sample preparation procedures. Preparation batches 320-707544 and 707542

Method TOP Post Prep: The following sample in preparation batch 320-706527 and 320-707730 was yellow in color following extraction. KFTA-DU5A DUPLICATE (320-104757-2).

Method TOP Pre - Prep: The following samples in preparation batch 320-706527 and 320-707676 were yellow in color following extraction. KFTA-DU5A (320-104757-1), KFTA-DU5A DUPLICATE (320-104757-2) and KFTA-DU5A TRIPLICATE (320-104757-3)

Method TOP Pre and Post Prep: The following samples were re-prepared outside of the preparation holding time to confirm results: KFTA-DU5A (320-104757-1), KFTA-DU5A DUPLICATE (320-104757-2), KFTA-DU5A TRIPLICATE (320-104757-3), KFTA-DU5B (320-104757-4) and KFTA-DU5C (320-104757-5).

Method TOP Pre and Post Prep: Due to QC anomalies, high analyte concentrations, and apparently incomplete oxidation the following samples were re-prepared outside of the preparation holding time for both Pre-TOP and Post-TOP analyses: KFTA-DU5A (320-104757-1), KFTA-DU5A DUPLICATE (320-104757-2) and KFTA-DU5A TRIPLICATE (320-104757-3). Samples were diluted by 20X prior to extraction and the reporting limits (RLs) have been adjusted proportionately. Preparation batch 320-706527, 320-716086 and 320-716087

Method EOF Prep: A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: samples were extracted initially using a 10 g sample aliquot to meet client requirements for sample preparation mass. The resulting extract was split and concentrated to yield the same overall sample preparation factor (1 g -> 2.5 ml) as is specified in the SOP.

Method EOF Prep: The following samples were extracted outside of the laboratory's default 28 day holding time (HT) for sample preparation due to laboratory scheduling error: KFTA-DU5A(320-104757-1), KFTA-DU5B (320-104757-4) and KFTA-DU5C (320-104757-5). No HT studies have been performed indicating that EOF concentrations in environmental matrices change significantly after collection and the adverse impact of the noted HT anomaly is expected to be minimal.

Case Narrative

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

Job ID: 320-104757-1

Job ID: 320-104757-1 (Continued)

Laboratory: Eurofins Sacramento (Continued)

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

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Detection Summary

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	19		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	25		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	34		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	3.7		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	6.1		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanoic acid (PFNA)	6.3		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanoic acid (PFDA)	4.5		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroundecanoic acid (PFUnA)	4.1		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	9.4		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	7.5		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS)	44		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	7.7		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanesulfonic acid (PFNS)	4.4		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanesulfonic acid (PFDS)	3.1		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorododecanesulfonic acid (PFDoS)	1.0		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonamide (FOSA)	1.3		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	8.7		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	5.1		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	3.4		1.0		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	940		20		ug/Kg	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	14		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	64	*+	1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	11	*+	1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA)	14		1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanoic acid (PFNA)	8.8	*+	1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanoic acid (PFDA)	5.5	*+	1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroundecanoic acid (PFUnA)	4.1		1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorododecanoic acid (PFDoA)	1.0		1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	8.3		1.0		ug/Kg	1		537 (modified)	Post-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: 320-104757-1

Client Sample ID: KFTA-DU5A (Continued)

Lab Sample ID: 320-104757-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanesulfonic acid (PFPeS)	6.6		1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	44		1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	6.5		1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanesulfonic acid (PFNS)	3.3		1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanesulfonic acid (PFDS)	2.5		1.0		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	670		20		ug/Kg	20		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	19		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	27	+	0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - IN3	1100	H	250		ng/L	1		537 (modified)	SPLP West
Perfluoropentanoic acid (PFPeA) - IN3	880	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanoic acid (PFHxA) - IN3	760	H **	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanoic acid (PFHpA) - IN3	110	H **	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanoic acid (PFOA) - IN3	130	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanesulfonic acid (PFBS) - IN3	690	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoropentanesulfonic acid (PFPeS) - IN3	470	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanesulfonic acid (PFHxS) - IN3	2100	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanesulfonic acid (PFHpS) - IN3	110	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanesulfonic acid (PFOS) - IN3	3600	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanoic acid (PFBA) - RE3	1200	H	250		ng/L	1		537 (modified)	SPLP West
Perfluoropentanoic acid (PFPeA) - RE3	1400	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanoic acid (PFHxA) - RE3	2000	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanoic acid (PFHpA) - RE3	180	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanoic acid (PFOA) - RE3	230	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanesulfonic acid (PFBS) - RE3	680	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoropentanesulfonic acid (PFPeS) - RE3	460	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanesulfonic acid (PFHxS) - RE3	2100	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanesulfonic acid (PFHpS) - RE3	140	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanesulfonic acid (PFOS) - RE3	3800	H	100		ng/L	1		537 (modified)	SPLP West
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE3	1100	H	250		ng/L	1		537 (modified)	SPLP West
Extractable Organic Fluorine (EOF)	650	H	500		ng/g	1		CIC EOF	Total/NA
Incremented sample generated	1.0				NONE	1		Increment, Prep	Total/NA

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: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	20		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	27		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	36		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	3.7		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	6.4		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanoic acid (PFNA)	6.3		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanoic acid (PFDA)	4.7		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroundecanoic acid (PFUnA)	4.2		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	9.5		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	7.4		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS)	49		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	8.1		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanesulfonic acid (PFNS)	4.5		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanesulfonic acid (PFDS)	3.1		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorododecanesulfonic acid (PFDoS)	1.0		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonamide (FOSA)	1.3		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.5		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	5.4		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	3.1		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	830		19		ug/Kg	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	13		0.98		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	67	+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	12	+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA)	15		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanoic acid (PFNA)	8.9	+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanoic acid (PFDA)	5.3	+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroundecanoic acid (PFUnA)	3.9		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorododecanoic acid (PFDoA)	0.98		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	10		0.97		ug/Kg	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: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE (Continued)

Lab Sample ID: 320-104757-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanesulfonic acid (PFPeS)	7.1		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	48		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	7.5		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanesulfonic acid (PFNS)	3.8		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanesulfonic acid (PFDS)	2.6		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorododecanesulfonic acid (PFDoS)	0.99		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	720		19		ug/Kg	20		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	18		0.98		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	24	*+	0.98		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - IN3	1400	H	250		ng/L	1		537 (modified)	SPLP West
Perfluoropentanoic acid (PFPeA) - IN3	1400	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanoic acid (PFHxA) - IN3	1900	H *+	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanoic acid (PFHpA) - IN3	200	H *+	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanoic acid (PFOA) - IN3	190	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanesulfonic acid (PFBS) - IN3	670	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoropentanesulfonic acid (PFPeS) - IN3	470	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanesulfonic acid (PFHxS) - IN3	2000	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanesulfonic acid (PFHpS) - IN3	110	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanesulfonic acid (PFOS) - IN3	3700	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanoic acid (PFBA) - RE3	1100	H	250		ng/L	1		537 (modified)	SPLP West
Perfluoropentanoic acid (PFPeA) - RE3	1300	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanoic acid (PFHxA) - RE3	2000	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanoic acid (PFHpA) - RE3	180	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanoic acid (PFOA) - RE3	200	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanesulfonic acid (PFBS) - RE3	660	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoropentanesulfonic acid (PFPeS) - RE3	440	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanesulfonic acid (PFHxS) - RE3	2100	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanesulfonic acid (PFHpS) - RE3	110	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanesulfonic acid (PFOS) - RE3	3700	H	100		ng/L	1		537 (modified)	SPLP West
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE3	960	H	250		ng/L	1		537 (modified)	SPLP West
Incremented sample generated	1.0				NONE	1		Increment, Prep	Total/NA

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: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	17		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	24		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	34		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	3.6		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	6.6		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanoic acid (PFNA)	6.4		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanoic acid (PFDA)	4.7		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroundecanoic acid (PFUnA)	4.1		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	8.9		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	6.7		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS)	47		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	7.6		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanesulfonic acid (PFNS)	4.2		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanesulfonic acid (PFDS)	2.8		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonamide (FOSA)	1.3		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.1		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	4.6		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	2.7		0.94		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	800		19		ug/Kg	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	16		0.98		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	57	+	0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	11	+	0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA)	12		0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanoic acid (PFNA)	7.4	+	0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanoic acid (PFDA)	5.1	+	0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroundecanoic acid (PFUnA)	3.4		0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	8.2		0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS)	6.0		0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	38		0.94		ug/Kg	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: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE (Continued)

Lab Sample ID: 320-104757-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanesulfonic acid (PFHpS)	6.2		0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanesulfonic acid (PFNS)	3.4		0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanesulfonic acid (PFDS)	2.3		0.94		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	720		19		ug/Kg	20		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	20		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	27	*+	0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - IN3	1300	H	250		ng/L	1		537 (modified)	SPLP West
Perfluoropentanoic acid (PFPeA) - IN3	1500	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanoic acid (PFHxA) - IN3	2000	H *+	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanoic acid (PFHpA) - IN3	210	H *+	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanoic acid (PFOA) - IN3	210	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanesulfonic acid (PFBS) - IN3	690	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoropentanesulfonic acid (PFPeS) - IN3	480	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanesulfonic acid (PFHxS) - IN3	2200	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanesulfonic acid (PFHpS) - IN3	120	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanesulfonic acid (PFOS) - IN3	3900	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanoic acid (PFBA) - RE3	1200	H	250		ng/L	1		537 (modified)	SPLP West
Perfluoropentanoic acid (PFPeA) - RE3	1300	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanoic acid (PFHxA) - RE3	2200	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanoic acid (PFHpA) - RE3	190	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanoic acid (PFOA) - RE3	220	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorobutanesulfonic acid (PFBS) - RE3	690	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoropentanesulfonic acid (PFPeS) - RE3	480	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorohexanesulfonic acid (PFHxS) - RE3	2300	H	100		ng/L	1		537 (modified)	SPLP West
Perfluoroheptanesulfonic acid (PFHpS) - RE3	110	H	100		ng/L	1		537 (modified)	SPLP West
Perfluorooctanesulfonic acid (PFOS) - RE3	3500	H	100		ng/L	1		537 (modified)	SPLP West
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE3	980	H	250		ng/L	1		537 (modified)	SPLP West
Incremented sample generated	1.0				NONE	1		Increment, Prep	Total/NA

Client Sample ID: KFTA-DU5B

Lab Sample ID: 320-104757-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	11		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	15		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	14		0.97		ug/Kg	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: 320-104757-1

Client Sample ID: KFTA-DU5B (Continued)

Lab Sample ID: 320-104757-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	2.7		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	4.4		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanoic acid (PFNA)	4.9		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanoic acid (PFDA)	3.0		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroundecanoic acid (PFUnA)	2.8		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	6.5		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	5.3		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS)	35		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	5.5		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanesulfonic acid (PFNS)	3.0		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanesulfonic acid (PFDS)	2.3		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorododecanesulfonic acid (PFDoS)	1.1		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonamide (FOSA)	1.0		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	5.3		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	4.9		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	2.2		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	670		19		ug/Kg	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	6.1		0.97		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	41	+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	6.6	+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA)	11		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanoic acid (PFNA)	5.9	+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanoic acid (PFDA)	3.2	+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroundecanoic acid (PFUnA)	2.9		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	6.7		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS)	5.1		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	35		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	4.9		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanesulfonic acid (PFNS)	2.8		0.97		ug/Kg	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: 320-104757-1

Client Sample ID: KFTA-DU5B (Continued)

Lab Sample ID: 320-104757-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorodecanesulfonic acid (PFDS)	1.8		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	530		19		ug/Kg	20		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	14		0.97		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	18	*+	0.97		ug/Kg	1		537 (modified)	Post-Treatment
Incremented sample generated	1.0				NONE	1		Increment, Prep	Total/NA

Client Sample ID: KFTA-DU5C

Lab Sample ID: 320-104757-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	13		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	18		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	21		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	2.6		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	4.3		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanoic acid (PFNA)	5.0		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanoic acid (PFDA)	3.3		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroundecanoic acid (PFUnA)	3.1		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	16		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	11		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS)	67		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	8.3		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorononanesulfonic acid (PFNS)	3.8		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorodecanesulfonic acid (PFDS)	2.4		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonamide (FOSA)	1.1		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	6.5		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	4.5		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	2.1		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	720		20		ug/Kg	20		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) - RE	6.2		0.99		ug/Kg	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	45	*+	0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	7.6	*+	0.99		ug/Kg	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: 320-104757-1

Client Sample ID: KFTA-DU5C (Continued)

Lab Sample ID: 320-104757-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	10		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanoic acid (PFNA)	5.9	*+	0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanoic acid (PFDA)	3.8	*+	0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroundecanoic acid (PFUnA)	3.1		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	14		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS)	11		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	64		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	7.1		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorononanesulfonic acid (PFNS)	3.4		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorodecanesulfonic acid (PFDS)	2.6		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorododecanesulfonic acid (PFDoS)	1.0		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS) - DL	740		20		ug/Kg	20		537 (modified)	Post-Treatment
Perfluorobutanoic acid (PFBA) - RE	16		0.99		ug/Kg	1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA) - RE	21	*+	0.99		ug/Kg	1		537 (modified)	Post-Treatment
Extractable Organic Fluorine (EOF)	990	H	500		ng/g	1		CIC EOF	Total/NA
Incremented sample generated	1.0				NONE	1		Increment, Prep	Total/NA

Client Sample ID: KFTA-DU5A SPLP LEACHATE

Lab Sample ID: 320-104757-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Adsorbable Organic Fluorine (AOF)	10		4.0		ug/L	1		ELLE SOP	Total/NA

Client Sample ID: SPLP lab blank

Lab Sample ID: 320-104757-7

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: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

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)	19		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluoropentanoic acid (PFPeA)	25		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorohexanoic acid (PFHxA)	34		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluoroheptanoic acid (PFHpA)	3.7		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorooctanoic acid (PFOA)	6.1		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorononanoic acid (PFNA)	6.3		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorodecanoic acid (PFDA)	4.5		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluoroundecanoic acid (PFUnA)	4.1		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorododecanoic acid (PFDoA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorotridecanoic acid (PFTTrDA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorobutanesulfonic acid (PFBS)	9.4		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluoropentanesulfonic acid (PFPeS)	7.5		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorohexanesulfonic acid (PFHxS)	44		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluoroheptanesulfonic acid (PFHpS)	7.7		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorononanesulfonic acid (PFNS)	4.4		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorodecanesulfonic acid (PFDS)	3.1		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorododecanesulfonic acid (PFDoS)	1.0		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluorooctanesulfonamide (FOSA)	1.3		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	8.7		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND *1		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

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		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	5.1		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	3.4		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
6:2 FTUCA	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	126		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C4 PFBA	42		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C5 PFPeA	91		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C2 PFHxA	102		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C4 PFHpA	114		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C4 PFOA	104		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C5 PFNA	70		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C2 PFDA	108		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C2 PFUnA	108		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C2 PFDoA	111		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C2 PFTeDA	92		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C2 PFHxDA	49		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C3 PFBS	110		25 - 150	09/19/23 22:00	09/23/23 11:38	1
18O2 PFHxS	118		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C4 PFOS	66		25 - 150	09/19/23 22:00	09/23/23 11:38	1
d5-NEtFOSAA	122		25 - 150	09/19/23 22:00	09/23/23 11:38	1
d3-NMeFOSAA	117		25 - 150	09/19/23 22:00	09/23/23 11:38	1
M2-4:2 FTS	116		25 - 150	09/19/23 22:00	09/23/23 11:38	1
M2-8:2 FTS	125		25 - 150	09/19/23 22:00	09/23/23 11:38	1
d-N-MeFOSA-M	115		25 - 150	09/19/23 22:00	09/23/23 11:38	1
d-N-EtFOSA-M	125		25 - 150	09/19/23 22:00	09/23/23 11:38	1
d7-N-MeFOSE-M	86		25 - 150	09/19/23 22:00	09/23/23 11:38	1
d9-N-EtFOSE-M	83		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C3 HFPO-DA	98		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C-6:2 FTCA	111		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C-8:2 FTCA	106		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C2 10:2 FTS	133		25 - 150	09/19/23 22:00	09/23/23 11:38	1
13C-6:2 FTUCA	133		25 - 150	09/19/23 22:00	09/23/23 11:38	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	940		20		ug/Kg		09/19/23 22:00	09/29/23 04:00	20
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C4 PFOS	84		25 - 150	09/19/23 22:00	09/29/23 04:00	20			

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

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
M2-4:2 FTS	88		25 - 150	09/19/23 22:00	09/29/23 04:00	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	14		0.99		ug/Kg		09/19/23 22:00	10/17/23 06:58	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	92		25 - 150	09/19/23 22:00	10/17/23 06:58	1
M2-6:2 FTS	100		25 - 150	09/19/23 22:00	10/17/23 06:58	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	64	+	1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluoroheptanoic acid (PFHpA)	11	+	1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorooctanoic acid (PFOA)	14		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorononanoic acid (PFNA)	8.8	+	1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorodecanoic acid (PFDA)	5.5	+	1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluoroundecanoic acid (PFUnA)	4.1		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorododecanoic acid (PFDoA)	1.0		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorotridecanoic acid (PFTTrDA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorotetradecanoic acid (PFTTeA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorobutanesulfonic acid (PFBS)	8.3		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluoropentanesulfonic acid (PFPeS)	6.6		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorohexanesulfonic acid (PFHxS)	44		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluoroheptanesulfonic acid (PFHpS)	6.5		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorononanesulfonic acid (PFNS)	3.3		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorodecanesulfonic acid (PFDS)	2.5		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluorooctanesulfonamide (FOSA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

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
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
6:2 FTUCA	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 08:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	120		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C4 PFBA	86		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C5 PFPeA	104		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C2 PFHxA	103		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C4 PFHpA	105		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C4 PFOA	105		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C5 PFNA	74		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C2 PFDA	103		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C2 PFUnA	100		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C2 PFDoA	104		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C2 PFTeDA	111		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C2 PFHxDA	93		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C3 PFBS	114		25 - 150				09/19/23 21:50	09/23/23 08:05	1
18O2 PFHxS	110		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C4 PFOS	69		25 - 150				09/19/23 21:50	09/23/23 08:05	1
d5-NEtFOSAA	120		25 - 150				09/19/23 21:50	09/23/23 08:05	1
d3-NMeFOSAA	111		25 - 150				09/19/23 21:50	09/23/23 08:05	1
M2-4:2 FTS	0		0 - 10				09/19/23 21:50	09/23/23 08:05	1
M2-6:2 FTS	96		25 - 150				09/19/23 21:50	09/23/23 08:05	1
M2-8:2 FTS	97		25 - 150				09/19/23 21:50	09/23/23 08:05	1
d-N-MeFOSA-M	104		25 - 150				09/19/23 21:50	09/23/23 08:05	1
d-N-EtFOSA-M	106		25 - 150				09/19/23 21:50	09/23/23 08:05	1
d7-N-MeFOSE-M	102		25 - 150				09/19/23 21:50	09/23/23 08:05	1
d9-N-EtFOSE-M	97		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C3 HFPO-DA	88		25 - 150				09/19/23 21:50	09/23/23 08:05	1
13C-6:2 FTCA	110		25 - 150				09/19/23 21:50	09/23/23 08:05	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

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
13C-8:2 FTCA	118		25 - 150	09/19/23 21:50	09/23/23 08:05	1
13C2 10:2 FTS	111		25 - 150	09/19/23 21:50	09/23/23 08:05	1
13C-6:2 FTUCA	131		25 - 150	09/19/23 21:50	09/23/23 08:05	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	670		20		ug/Kg		09/19/23 21:50	09/29/23 02:19	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	103		25 - 150	09/19/23 21:50	09/29/23 02:19	20
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	09/29/23 02:19	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	19		0.99		ug/Kg		09/19/23 21:50	10/17/23 11:30	1
Perfluoropentanoic acid (PFPeA)	27	*+	0.99		ug/Kg		09/19/23 21:50	10/17/23 11:30	1
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.99		ug/Kg		09/19/23 21:50	10/17/23 11:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	54		25 - 150	09/19/23 21:50	10/17/23 11:30	1
13C5 PFPeA	91		25 - 150	09/19/23 21:50	10/17/23 11:30	1
13C4 PFOS	67		25 - 150	09/19/23 21:50	10/17/23 11:30	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	10/17/23 11:30	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/20/23 12:55	09/23/23 06:36	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	*+	5.0		ng/L		09/20/23 12:55	09/23/23 06:36	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 06:36	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 06:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	102		25 - 150	09/20/23 12:55	09/23/23 06:36	1
13C2 PFHxDA	105		25 - 150	09/20/23 12:55	09/23/23 06:36	1
M2-4:2 FTS	85	*5+	0 - 10	09/20/23 12:55	09/23/23 06:36	1
13C3 HFPO-DA	98		25 - 150	09/20/23 12:55	09/23/23 06:36	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1100	H	250		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluoropentanoic acid (PFPeA)	880	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorohexanoic acid (PFHxA)	760	H *+	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluoroheptanoic acid (PFHpA)	110	H *+	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorooctanoic acid (PFOA)	130	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorononanoic acid (PFNA)	ND	H *+	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorodecanoic acid (PFDA)	ND	H *+	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluoroundecanoic acid (PFUnA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorododecanoic acid (PFDoA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotridecanoic acid (PFTrDA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorobutanesulfonic acid (PFBS)	690	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluoropentanesulfonic acid (PFPeS)	470	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorohexanesulfonic acid (PFHxS)	2100	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluoroheptanesulfonic acid (PFHpS)	110	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorooctanesulfonic acid (PFOS)	3600	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorononanesulfonic acid (PFNS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluorooctanesulfonamide (FOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:27	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:27	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:27	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	200		ng/L		10/26/23 20:32	11/01/23 00:27	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
6:2 FTUCA	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:27	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	63		25 - 150				10/26/23 20:32	11/01/23 00:27	1
13C4 PFBA	25		25 - 150				10/26/23 20:32	11/01/23 00:27	1

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Project/Site: Kahalui Fire Training Pit Study

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFPeA	77		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C2 PFHxA	73		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C4 PFHpA	79		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C4 PFOA	73		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C5 PFNA	70		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C2 PFDA	67		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C2 PFUnA	65		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C2 PFDoA	64		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C2 PFTeDA	59		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C2 PFHxDA	41		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C3 PFBS	66		25 - 150	10/26/23 20:32	11/01/23 00:27	1
18O2 PFHxS	71		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C4 PFOS	60		25 - 150	10/26/23 20:32	11/01/23 00:27	1
d5-NEtFOSAA	61		25 - 150	10/26/23 20:32	11/01/23 00:27	1
d3-NMeFOSAA	56		25 - 150	10/26/23 20:32	11/01/23 00:27	1
M2-4:2 FTS	0		0 - 10	10/26/23 20:32	11/01/23 00:27	1
M2-6:2 FTS	71		25 - 150	10/26/23 20:32	11/01/23 00:27	1
M2-8:2 FTS	65		25 - 150	10/26/23 20:32	11/01/23 00:27	1
d-N-MeFOSA-M	59		25 - 150	10/26/23 20:32	11/01/23 00:27	1
d-N-EtFOSA-M	55		25 - 150	10/26/23 20:32	11/01/23 00:27	1
d7-N-MeFOSE-M	51		25 - 150	10/26/23 20:32	11/01/23 00:27	1
d9-N-EtFOSE-M	48		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C3 HFPO-DA	57		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C-6:2 FTCA	46		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C-8:2 FTCA	41		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C2 10:2 FTS	65		25 - 150	10/26/23 20:32	11/01/23 00:27	1
13C-6:2 FTUCA	88		25 - 150	10/26/23 20:32	11/01/23 00:27	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - RE3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1200	H	250		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluoropentanoic acid (PFPeA)	1400	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorohexanoic acid (PFHxA)	2000	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluoroheptanoic acid (PFHpA)	180	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorooctanoic acid (PFOA)	230	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorononanoic acid (PFNA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorodecanoic acid (PFDA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluoroundecanoic acid (PFUnA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorododecanoic acid (PFDoA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorotridecanoic acid (PFTTrDA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorobutanesulfonic acid (PFBS)	680	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluoropentanesulfonic acid (PFPeS)	460	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorohexanesulfonic acid (PFHxS)	2100	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluoroheptanesulfonic acid (PFHpS)	140	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorooctanesulfonic acid (PFOS)	3800	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - RE3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanesulfonic acid (PFNS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluorooctanesulfonamide (FOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	250		ng/L		10/26/23 20:32	10/31/23 22:58	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	250		ng/L		10/26/23 20:32	10/31/23 22:58	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1100	H	250		ng/L		10/26/23 20:32	10/31/23 22:58	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	200		ng/L		10/26/23 20:32	10/31/23 22:58	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	200		ng/L		10/26/23 20:32	10/31/23 22:58	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
6:2 FTUCA	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 22:58	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	58		25 - 150				10/26/23 20:32	10/31/23 22:58	1
13C4 PFBA	72		25 - 150				10/26/23 20:32	10/31/23 22:58	1
13C5 PFPeA	79		25 - 150				10/26/23 20:32	10/31/23 22:58	1
13C2 PFHxA	78		25 - 150				10/26/23 20:32	10/31/23 22:58	1
13C4 PFHpA	75		25 - 150				10/26/23 20:32	10/31/23 22:58	1
13C4 PFOA	75		25 - 150				10/26/23 20:32	10/31/23 22:58	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - RE3 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	76		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C2 PFDA	75		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C2 PFUnA	68		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C2 PFDoA	65		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C2 PFTeDA	55		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C2 PFHxDA	46		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C3 PFBS	70		25 - 150	10/26/23 20:32	10/31/23 22:58	1
18O2 PFHxS	74		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C4 PFOS	64		25 - 150	10/26/23 20:32	10/31/23 22:58	1
d5-NEtFOSAA	57		25 - 150	10/26/23 20:32	10/31/23 22:58	1
d3-NMeFOSAA	58		25 - 150	10/26/23 20:32	10/31/23 22:58	1
M2-4:2 FTS	81		25 - 150	10/26/23 20:32	10/31/23 22:58	1
M2-6:2 FTS	77		25 - 150	10/26/23 20:32	10/31/23 22:58	1
M2-8:2 FTS	66		25 - 150	10/26/23 20:32	10/31/23 22:58	1
d-N-MeFOSA-M	45		25 - 150	10/26/23 20:32	10/31/23 22:58	1
d-N-EtFOSA-M	46		25 - 150	10/26/23 20:32	10/31/23 22:58	1
d7-N-MeFOSE-M	49		25 - 150	10/26/23 20:32	10/31/23 22:58	1
d9-N-EtFOSE-M	43		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C3 HFPO-DA	65		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C-6:2 FTCA	48		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C-8:2 FTCA	48		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C2 10:2 FTS	64		25 - 150	10/26/23 20:32	10/31/23 22:58	1
13C-6:2 FTUCA	87		25 - 150	10/26/23 20:32	10/31/23 22:58	1

Method: Lab SOP CIC EOF - Extractable Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Extractable Organic Fluorine (EOF)	650	H	500		ng/g		11/08/23 13:11	11/10/23 03:10	1

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Incremented sample generated (EPA Increment, Prep)	1.0				NONE			09/13/23 14:08	1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

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)	20		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluoropentanoic acid (PFPeA)	27		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorohexanoic acid (PFHxA)	36		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluoroheptanoic acid (PFHpA)	3.7		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorooctanoic acid (PFOA)	6.4		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorononanoic acid (PFNA)	6.3		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorodecanoic acid (PFDA)	4.7		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluoroundecanoic acid (PFUnA)	4.2		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorododecanoic acid (PFDoA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorotridecanoic acid (PFTTrDA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

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
Perfluorobutanesulfonic acid (PFBS)	9.5		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluoropentanesulfonic acid (PFPeS)	7.4		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorohexanesulfonic acid (PFHxS)	49		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluoroheptanesulfonic acid (PFHpS)	8.1		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorononanesulfonic acid (PFNS)	4.5		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorodecanesulfonic acid (PFDS)	3.1		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorododecanesulfonic acid (PFDoS)	1.0		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluorooctanesulfonamide (FOSA)	1.3		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.5		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND *1		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	5.4		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	3.1		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
6:2 FTUCA	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

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
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 11:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	133		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C4 PFBA	26		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C5 PFPeA	93		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C2 PFHxA	105		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C4 PFHpA	117		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C4 PFOA	112		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C5 PFNA	76		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C2 PFDA	111		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C2 PFUnA	112		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C2 PFDoA	110		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C2 PFTeDA	89		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C2 PFHxDA	48		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C3 PFBS	118		25 - 150				09/19/23 22:00	09/23/23 11:49	1
18O2 PFHxS	121		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C4 PFOS	71		25 - 150				09/19/23 22:00	09/23/23 11:49	1
d5-NEtFOSAA	132		25 - 150				09/19/23 22:00	09/23/23 11:49	1
d3-NMeFOSAA	123		25 - 150				09/19/23 22:00	09/23/23 11:49	1
M2-4:2 FTS	123		25 - 150				09/19/23 22:00	09/23/23 11:49	1
M2-8:2 FTS	117		25 - 150				09/19/23 22:00	09/23/23 11:49	1
d-N-MeFOSA-M	124		25 - 150				09/19/23 22:00	09/23/23 11:49	1
d-N-EtFOSA-M	125		25 - 150				09/19/23 22:00	09/23/23 11:49	1
d7-N-MeFOSE-M	91		25 - 150				09/19/23 22:00	09/23/23 11:49	1
d9-N-EtFOSE-M	92		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C3 HFPO-DA	97		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C-6:2 FTCA	112		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C-8:2 FTCA	118		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C2 10:2 FTS	143		25 - 150				09/19/23 22:00	09/23/23 11:49	1
13C-6:2 FTUCA	140		25 - 150				09/19/23 22:00	09/23/23 11:49	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	830		19		ug/Kg		09/19/23 22:00	09/29/23 04:11	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOS	106		25 - 150				09/19/23 22:00	09/29/23 04:11	20
M2-4:2 FTS	106		25 - 150				09/19/23 22:00	09/29/23 04:11	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	13		0.98		ug/Kg		09/19/23 22:00	10/17/23 07:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-4:2 FTS	75		25 - 150				09/19/23 22:00	10/17/23 07:09	1
M2-6:2 FTS	103		25 - 150				09/19/23 22:00	10/17/23 07:09	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

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
Perfluorohexanoic acid (PFHxA)	67	++	0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluoroheptanoic acid (PFHpA)	12	++	0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorooctanoic acid (PFOA)	15		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorononanoic acid (PFNA)	8.9	++	0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorodecanoic acid (PFDA)	5.3	++	0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluoroundecanoic acid (PFUnA)	3.9		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorododecanoic acid (PFDoA)	0.98		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorotridecanoic acid (PFTrDA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorobutanesulfonic acid (PFBS)	10		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluoropentanesulfonic acid (PFPeS)	7.1		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorohexanesulfonic acid (PFHxS)	48		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluoroheptanesulfonic acid (PFHpS)	7.5		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorononanesulfonic acid (PFNS)	3.8		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorodecanesulfonic acid (PFDS)	2.6		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorododecanesulfonic acid (PFDoS)	0.99		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluorooctanesulfonamide (FOSA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

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-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
6:2 FTUCA	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	131		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C4 PFBA	40		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C5 PFPeA	104		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C2 PFHxA	104		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C4 PFHpA	104		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C4 PFOA	101		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C5 PFNA	69		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C2 PFDA	100		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C2 PFUnA	105		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C2 PFDoA	95		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C2 PFTeDA	108		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C2 PFHxDA	94		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C3 PFBS	111		25 - 150	09/19/23 21:50	09/23/23 08:17	1
18O2 PFHxS	111		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C4 PFOS	68		25 - 150	09/19/23 21:50	09/23/23 08:17	1
d5-NEtFOSAA	117		25 - 150	09/19/23 21:50	09/23/23 08:17	1
d3-NMeFOSAA	108		25 - 150	09/19/23 21:50	09/23/23 08:17	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	09/23/23 08:17	1
M2-6:2 FTS	104		25 - 150	09/19/23 21:50	09/23/23 08:17	1
M2-8:2 FTS	92		25 - 150	09/19/23 21:50	09/23/23 08:17	1
d-N-MeFOSA-M	110		25 - 150	09/19/23 21:50	09/23/23 08:17	1
d-N-EtFOSA-M	110		25 - 150	09/19/23 21:50	09/23/23 08:17	1
d7-N-MeFOSE-M	94		25 - 150	09/19/23 21:50	09/23/23 08:17	1
d9-N-EtFOSE-M	89		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C3 HFPO-DA	90		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C-6:2 FTCA	114		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C-8:2 FTCA	113		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C2 10:2 FTS	117		25 - 150	09/19/23 21:50	09/23/23 08:17	1
13C-6:2 FTUCA	125		25 - 150	09/19/23 21:50	09/23/23 08:17	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	720		19		ug/Kg		09/19/23 21:50	09/29/23 02:30	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	109		25 - 150	09/19/23 21:50	09/29/23 02:30	20
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	09/29/23 02:30	20

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

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)	18		0.98		ug/Kg		09/19/23 21:50	10/17/23 11:42	1
Perfluoropentanoic acid (PFPeA)	24	+	0.98		ug/Kg		09/19/23 21:50	10/17/23 11:42	1
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.98		ug/Kg		09/19/23 21:50	10/17/23 11:42	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	35		25 - 150				09/19/23 21:50	10/17/23 11:42	1
13C5 PFPeA	93		25 - 150				09/19/23 21:50	10/17/23 11:42	1
13C4 PFOS	69		25 - 150				09/19/23 21:50	10/17/23 11:42	1
M2-4:2 FTS	0		0 - 10				09/19/23 21:50	10/17/23 11:42	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/20/23 12:55	09/23/23 06:47	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	+	5.0		ng/L		09/20/23 12:55	09/23/23 06:47	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 06:47	1
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 06:47	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C5 PFPeA	108		25 - 150				09/20/23 12:55	09/23/23 06:47	1
13C2 PFHxA	106		25 - 150				09/20/23 12:55	09/23/23 06:47	1
M2-4:2 FTS	88	*5+	0 - 10				09/20/23 12:55	09/23/23 06:47	1
13C3 HFPO-DA	100		25 - 150				09/20/23 12:55	09/23/23 06:47	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1400	H	250		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluoropentanoic acid (PFPeA)	1400	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorohexanoic acid (PFHxA)	1900	H **	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluoroheptanoic acid (PFHpA)	200	H **	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorooctanoic acid (PFOA)	190	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorononanoic acid (PFNA)	ND	H **	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorodecanoic acid (PFDA)	ND	H **	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluoroundecanoic acid (PFUnA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorododecanoic acid (PFDoA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorotridecanoic acid (PFTTrDA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorobutanesulfonic acid (PFBS)	670	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluoropentanesulfonic acid (PFPeS)	470	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorohexanesulfonic acid (PFHxS)	2000	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluoroheptanesulfonic acid (PFHpS)	110	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorooctanesulfonic acid (PFOS)	3700	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorononanesulfonic acid (PFNS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorododecanesulfonic acid (PFDoS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluorooctanesulfonamide (FOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:39	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:39	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:39	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	200		ng/L		10/26/23 20:32	11/01/23 00:39	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
6:2 FTUCA	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	64		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C4 PFBA	23	*5-	25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C5 PFPeA	74		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C2 PFHxA	74		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C4 PFHpA	79		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C4 PFOA	76		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C5 PFNA	72		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C2 PFDA	71		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C2 PFUnA	70		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C2 PFDoA	70		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C2 PFTeDA	67		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C2 PFHxDA	55		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C3 PFBS	69		25 - 150	10/26/23 20:32	11/01/23 00:39	1
18O2 PFHxS	74		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C4 PFOS	61		25 - 150	10/26/23 20:32	11/01/23 00:39	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	63		25 - 150	10/26/23 20:32	11/01/23 00:39	1
d3-NMeFOSAA	60		25 - 150	10/26/23 20:32	11/01/23 00:39	1
M2-4:2 FTS	0		0 - 10	10/26/23 20:32	11/01/23 00:39	1
M2-6:2 FTS	69		25 - 150	10/26/23 20:32	11/01/23 00:39	1
M2-8:2 FTS	69		25 - 150	10/26/23 20:32	11/01/23 00:39	1
d-N-MeFOSA-M	60		25 - 150	10/26/23 20:32	11/01/23 00:39	1
d-N-EtFOSA-M	51		25 - 150	10/26/23 20:32	11/01/23 00:39	1
d7-N-MeFOSE-M	53		25 - 150	10/26/23 20:32	11/01/23 00:39	1
d9-N-EtFOSE-M	51		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C3 HFPO-DA	67		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C-6:2 FTCA	47		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C-8:2 FTCA	44		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C2 10:2 FTS	62		25 - 150	10/26/23 20:32	11/01/23 00:39	1
13C-6:2 FTUCA	89		25 - 150	10/26/23 20:32	11/01/23 00:39	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - RE3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1100	H	250		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluoropentanoic acid (PFPeA)	1300	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorohexanoic acid (PFHxA)	2000	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluoroheptanoic acid (PFHpA)	180	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorooctanoic acid (PFOA)	200	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorononanoic acid (PFNA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorodecanoic acid (PFDA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluoroundecanoic acid (PFUnA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorododecanoic acid (PFDoA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorotridecanoic acid (PFTTrDA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorobutanesulfonic acid (PFBS)	660	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluoropentanesulfonic acid (PFPeS)	440	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorohexanesulfonic acid (PFHxS)	2100	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluoroheptanesulfonic acid (PFHpS)	110	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorooctanesulfonic acid (PFOS)	3700	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorononanesulfonic acid (PFNS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluorooctanesulfonamide (FOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	250		ng/L		10/26/23 20:32	10/31/23 23:09	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	250		ng/L		10/26/23 20:32	10/31/23 23:09	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - RE3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	960	H	250		ng/L		10/26/23 20:32	10/31/23 23:09	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	200		ng/L		10/26/23 20:32	10/31/23 23:09	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	200		ng/L		10/26/23 20:32	10/31/23 23:09	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
6:2 FTUCA	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	50		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C4 PFBA	75		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C5 PFPeA	77		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C2 PFHxA	78		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C4 PFHpA	80		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C4 PFOA	81		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C5 PFNA	74		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C2 PFDA	71		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C2 PFUnA	62		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C2 PFDoA	61		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C2 PFTeDA	56		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C2 PFHxDA	48		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C3 PFBS	67		25 - 150	10/26/23 20:32	10/31/23 23:09	1
18O2 PFHxS	70		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C4 PFOS	61		25 - 150	10/26/23 20:32	10/31/23 23:09	1
d5-NEtFOSAA	55		25 - 150	10/26/23 20:32	10/31/23 23:09	1
d3-NMeFOSAA	54		25 - 150	10/26/23 20:32	10/31/23 23:09	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - RE3 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-4:2 FTS	65		25 - 150	10/26/23 20:32	10/31/23 23:09	1
M2-6:2 FTS	71		25 - 150	10/26/23 20:32	10/31/23 23:09	1
M2-8:2 FTS	70		25 - 150	10/26/23 20:32	10/31/23 23:09	1
d-N-MeFOSA-M	40		25 - 150	10/26/23 20:32	10/31/23 23:09	1
d-N-EtFOSA-M	41		25 - 150	10/26/23 20:32	10/31/23 23:09	1
d7-N-MeFOSE-M	48		25 - 150	10/26/23 20:32	10/31/23 23:09	1
d9-N-EtFOSE-M	42		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C3 HFPO-DA	66		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C-6:2 FTCA	48		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C-8:2 FTCA	47		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C2 10:2 FTS	62		25 - 150	10/26/23 20:32	10/31/23 23:09	1
13C-6:2 FTUCA	88		25 - 150	10/26/23 20:32	10/31/23 23:09	1

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Incremented sample generated (EPA Increment, Prep)	1.0				NONE			09/13/23 14:08	1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

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)	17		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluoropentanoic acid (PFPeA)	24		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorohexanoic acid (PFHxA)	34		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluoroheptanoic acid (PFHpA)	3.6		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorooctanoic acid (PFOA)	6.6		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorononanoic acid (PFNA)	6.4		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorodecanoic acid (PFDA)	4.7		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluoroundecanoic acid (PFUnA)	4.1		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorododecanoic acid (PFDoA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorotridecanoic acid (PFTTrDA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorobutanesulfonic acid (PFBS)	8.9		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluoropentanesulfonic acid (PFPeS)	6.7		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorohexanesulfonic acid (PFHxS)	47		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluoroheptanesulfonic acid (PFHpS)	7.6		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorononanesulfonic acid (PFNS)	4.2		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorodecanesulfonic acid (PFDS)	2.8		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluorooctanesulfonamide (FOSA)	1.3		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

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
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.1		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	*1	0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	4.6		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	2.7		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
6:2 FTUCA	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.94		ug/Kg		09/19/23 22:00	09/23/23 12:00	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	123		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C4 PFBA	73		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C5 PFPeA	92		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C2 PFHxA	97		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C4 PFHpA	108		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C4 PFOA	96		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C5 PFNA	69		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C2 PFDA	105		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C2 PFUnA	105		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C2 PFDoA	107		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C2 PFTeDA	89		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C2 PFHxDA	46		25 - 150	09/19/23 22:00	09/23/23 12:00	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

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
13C3 PFBS	111		25 - 150	09/19/23 22:00	09/23/23 12:00	1
18O2 PFHxS	113		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C4 PFOS	68		25 - 150	09/19/23 22:00	09/23/23 12:00	1
d5-NEtFOSAA	123		25 - 150	09/19/23 22:00	09/23/23 12:00	1
d3-NMeFOSAA	123		25 - 150	09/19/23 22:00	09/23/23 12:00	1
M2-4:2 FTS	108		25 - 150	09/19/23 22:00	09/23/23 12:00	1
M2-8:2 FTS	115		25 - 150	09/19/23 22:00	09/23/23 12:00	1
d-N-MeFOSA-M	112		25 - 150	09/19/23 22:00	09/23/23 12:00	1
d-N-EtFOSA-M	113		25 - 150	09/19/23 22:00	09/23/23 12:00	1
d7-N-MeFOSE-M	84		25 - 150	09/19/23 22:00	09/23/23 12:00	1
d9-N-EtFOSE-M	82		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C3 HFPO-DA	90		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C-6:2 FTCA	114		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C-8:2 FTCA	114		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C2 10:2 FTS	123		25 - 150	09/19/23 22:00	09/23/23 12:00	1
13C-6:2 FTUCA	134		25 - 150	09/19/23 22:00	09/23/23 12:00	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	800		19		ug/Kg		09/19/23 22:00	09/29/23 04:22	20
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C4 PFOS	93		25 - 150	09/19/23 22:00	09/29/23 04:22	20			
M2-4:2 FTS	90		25 - 150	09/19/23 22:00	09/29/23 04:22	20			

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	16		0.98		ug/Kg		09/19/23 22:00	10/17/23 07:21	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
M2-4:2 FTS	87		25 - 150	09/19/23 22:00	10/17/23 07:21	1			
M2-6:2 FTS	101		25 - 150	09/19/23 22:00	10/17/23 07:21	1			

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	57	+	0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluoroheptanoic acid (PFHpA)	11	+	0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorooctanoic acid (PFOA)	12		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorononanoic acid (PFNA)	7.4	+	0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorodecanoic acid (PFDA)	5.1	+	0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluoroundecanoic acid (PFUnA)	3.4		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorododecanoic acid (PFDoA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorotridecanoic acid (PFTTrDA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorobutanesulfonic acid (PFBS)	8.2		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluoropentanesulfonic acid (PFPeS)	6.0		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorohexanesulfonic acid (PFHxS)	38		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

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
Perfluoroheptanesulfonic acid (PFHpS)	6.2		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorononanesulfonic acid (PFNS)	3.4		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorodecanesulfonic acid (PFDS)	2.3		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluorooctanesulfonamide (FOSA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
6:2 FTUCA	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.94		ug/Kg		09/19/23 21:50	09/23/23 08:28	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	132		25 - 150				09/19/23 21:50	09/23/23 08:28	1
13C4 PFBA	26		25 - 150				09/19/23 21:50	09/23/23 08:28	1
13C5 PFPeA	108		25 - 150				09/19/23 21:50	09/23/23 08:28	1
13C2 PFHxA	105		25 - 150				09/19/23 21:50	09/23/23 08:28	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

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	106		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C4 PFOA	108		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C5 PFNA	80		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C2 PFDA	111		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C2 PFUnA	115		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C2 PFDoA	106		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C2 PFTeDA	109		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C2 PFHxDA	101		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C3 PFBS	121		25 - 150	09/19/23 21:50	09/23/23 08:28	1
18O2 PFHxS	118		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C4 PFOS	73		25 - 150	09/19/23 21:50	09/23/23 08:28	1
d5-NEtFOSAA	130		25 - 150	09/19/23 21:50	09/23/23 08:28	1
d3-NMeFOSAA	114		25 - 150	09/19/23 21:50	09/23/23 08:28	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	09/23/23 08:28	1
M2-6:2 FTS	106		25 - 150	09/19/23 21:50	09/23/23 08:28	1
M2-8:2 FTS	102		25 - 150	09/19/23 21:50	09/23/23 08:28	1
d-N-MeFOSA-M	113		25 - 150	09/19/23 21:50	09/23/23 08:28	1
d-N-EtFOSA-M	121		25 - 150	09/19/23 21:50	09/23/23 08:28	1
d7-N-MeFOSE-M	102		25 - 150	09/19/23 21:50	09/23/23 08:28	1
d9-N-EtFOSE-M	100		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C3 HFPO-DA	91		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C-6:2 FTCA	112		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C-8:2 FTCA	118		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C2 10:2 FTS	118		25 - 150	09/19/23 21:50	09/23/23 08:28	1
13C-6:2 FTUCA	135		25 - 150	09/19/23 21:50	09/23/23 08:28	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	720		19		ug/Kg		09/19/23 21:50	09/29/23 02:41	20
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C4 PFOS	86		25 - 150	09/19/23 21:50	09/29/23 02:41	20			
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	09/29/23 02:41	20			

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	20		0.99		ug/Kg		09/19/23 21:50	10/17/23 11:53	1
Perfluoropentanoic acid (PFPeA)	27	+	0.99		ug/Kg		09/19/23 21:50	10/17/23 11:53	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.99		ug/Kg		09/19/23 21:50	10/17/23 11:53	1
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
13C4 PFBA	55		25 - 150	09/19/23 21:50	10/17/23 11:53	1			
13C5 PFPeA	98		25 - 150	09/19/23 21:50	10/17/23 11:53	1			
13C4 PFOS	72		25 - 150	09/19/23 21:50	10/17/23 11:53	1			
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	10/17/23 11:53	1			

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/20/23 12:55	09/23/23 06:58	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN2 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	*+	5.0		ng/L		09/20/23 12:55	09/23/23 06:58	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 06:58	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 06:58	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C5 PFPeA	93		25 - 150				09/20/23 12:55	09/23/23 06:58	1
13C2 PFHxA	91		25 - 150				09/20/23 12:55	09/23/23 06:58	1
M2-4:2 FTS	68	*5+	0 - 10				09/20/23 12:55	09/23/23 06:58	1
13C3 HFPO-DA	97		25 - 150				09/20/23 12:55	09/23/23 06:58	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1300	H	250		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluoropentanoic acid (PFPeA)	1500	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorohexanoic acid (PFHxA)	2000	H **	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluoroheptanoic acid (PFHpA)	210	H **	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorooctanoic acid (PFOA)	210	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorononanoic acid (PFNA)	ND	H **	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorodecanoic acid (PFDA)	ND	H **	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluoroundecanoic acid (PFUnA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorododecanoic acid (PFDoA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorobutanesulfonic acid (PFBS)	690	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluoropentanesulfonic acid (PFPeS)	480	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorohexanesulfonic acid (PFHxS)	2200	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluoroheptanesulfonic acid (PFHpS)	120	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorooctanesulfonic acid (PFOS)	3900	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorononanesulfonic acid (PFNS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluorooctanesulfonamide (FOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:50	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:50	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	250		ng/L		10/26/23 20:32	11/01/23 00:50	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	200		ng/L		10/26/23 20:32	11/01/23 00:50	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
11-Chloroicosadecafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
6:2 FTUCA	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	100		ng/L		10/26/23 20:32	11/01/23 00:50	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	54		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C4 PFBA	69		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C5 PFPeA	75		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C2 PFHxA	73		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C4 PFHpA	75		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C4 PFOA	77		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C5 PFNA	72		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C2 PFDA	67		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C2 PFUnA	67		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C2 PFDoA	62		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C2 PFTeDA	64		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C2 PFHxDA	59		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C3 PFBS	66		25 - 150	10/26/23 20:32	11/01/23 00:50	1
18O2 PFHxS	69		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C4 PFOS	58		25 - 150	10/26/23 20:32	11/01/23 00:50	1
d5-NEtFOSAA	55		25 - 150	10/26/23 20:32	11/01/23 00:50	1
d3-NMeFOSAA	50		25 - 150	10/26/23 20:32	11/01/23 00:50	1
M2-4:2 FTS	0		0 - 10	10/26/23 20:32	11/01/23 00:50	1
M2-6:2 FTS	65		25 - 150	10/26/23 20:32	11/01/23 00:50	1
M2-8:2 FTS	66		25 - 150	10/26/23 20:32	11/01/23 00:50	1
d-N-MeFOSA-M	44		25 - 150	10/26/23 20:32	11/01/23 00:50	1
d-N-EtFOSA-M	41		25 - 150	10/26/23 20:32	11/01/23 00:50	1
d7-N-MeFOSE-M	54		25 - 150	10/26/23 20:32	11/01/23 00:50	1
d9-N-EtFOSE-M	48		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C3 HFPO-DA	65		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C-6:2 FTCA	48		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C-8:2 FTCA	39		25 - 150	10/26/23 20:32	11/01/23 00:50	1
13C2 10:2 FTS	58		25 - 150	10/26/23 20:32	11/01/23 00:50	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - IN3 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C-6:2 FTUCA	87		25 - 150	10/26/23 20:32	11/01/23 00:50	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - RE3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1200	H	250		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluoropentanoic acid (PFPeA)	1300	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorohexanoic acid (PFHxA)	2200	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluoroheptanoic acid (PFHpA)	190	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorooctanoic acid (PFOA)	220	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorononanoic acid (PFNA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorodecanoic acid (PFDA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluoroundecanoic acid (PFUnA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorododecanoic acid (PFDoA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorobutanesulfonic acid (PFBS)	690	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluoropentanesulfonic acid (PFPeS)	480	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorohexanesulfonic acid (PFHxS)	2300	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluoroheptanesulfonic acid (PFHpS)	110	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorooctanesulfonic acid (PFOS)	3500	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorononanesulfonic acid (PFNS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluorooctanesulfonamide (FOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
N-Methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	250		ng/L		10/26/23 20:32	10/31/23 23:21	1
N-Ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	250		ng/L		10/26/23 20:32	10/31/23 23:21	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	980	H	250		ng/L		10/26/23 20:32	10/31/23 23:21	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	200		ng/L		10/26/23 20:32	10/31/23 23:21	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	200		ng/L		10/26/23 20:32	10/31/23 23:21	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - SPLP West - RE3 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	*+ H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
6:2 FTUCA	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	100		ng/L		10/26/23 20:32	10/31/23 23:21	1
<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>				<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
13C8 FOSA	60		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C4 PFBA	70		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C5 PFPeA	78		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C2 PFHxA	77		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C4 PFHpA	83		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C4 PFOA	80		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C5 PFNA	77		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C2 PFDA	78		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C2 PFUnA	71		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C2 PFDoA	71		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C2 PFTeDA	63		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C2 PFHxDA	49		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C3 PFBS	69		25 - 150				10/26/23 20:32	10/31/23 23:21	1
18O2 PFHxS	71		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C4 PFOS	64		25 - 150				10/26/23 20:32	10/31/23 23:21	1
d5-NEtFOSAA	65		25 - 150				10/26/23 20:32	10/31/23 23:21	1
d3-NMeFOSAA	55		25 - 150				10/26/23 20:32	10/31/23 23:21	1
M2-4:2 FTS	81		25 - 150				10/26/23 20:32	10/31/23 23:21	1
M2-6:2 FTS	77		25 - 150				10/26/23 20:32	10/31/23 23:21	1
M2-8:2 FTS	71		25 - 150				10/26/23 20:32	10/31/23 23:21	1
d-N-MeFOSA-M	43		25 - 150				10/26/23 20:32	10/31/23 23:21	1
d-N-EtFOSA-M	46		25 - 150				10/26/23 20:32	10/31/23 23:21	1
d7-N-MeFOSE-M	52		25 - 150				10/26/23 20:32	10/31/23 23:21	1
d9-N-EtFOSE-M	53		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C3 HFPO-DA	65		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C-6:2 FTCA	51		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C-8:2 FTCA	49		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C2 10:2 FTS	68		25 - 150				10/26/23 20:32	10/31/23 23:21	1
13C-6:2 FTUCA	91		25 - 150				10/26/23 20:32	10/31/23 23:21	1

Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

Date Received: 09/12/23 09:30

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Incremented sample generated (EPA Increment, Prep)	1.0				NONE			09/13/23 14:08	1

Client Sample ID: KFTA-DU5B

Lab Sample ID: 320-104757-4

Date Collected: 09/06/23 11:30

Matrix: Solid

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)	11		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluoropentanoic acid (PFPeA)	15		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorohexanoic acid (PFHxA)	14		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluoroheptanoic acid (PFHpA)	2.7		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorooctanoic acid (PFOA)	4.4		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorononanoic acid (PFNA)	4.9		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorodecanoic acid (PFDA)	3.0		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluoroundecanoic acid (PFUnA)	2.8		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorododecanoic acid (PFDoA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorotridecanoic acid (PFTTrDA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorotetradecanoic acid (PFTTeA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorobutanesulfonic acid (PFBS)	6.5		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluoropentanesulfonic acid (PFPeS)	5.3		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorohexanesulfonic acid (PFHxS)	35		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluoroheptanesulfonic acid (PFHpS)	5.5		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorononanesulfonic acid (PFNS)	3.0		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorodecanesulfonic acid (PFDS)	2.3		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorododecanesulfonic acid (PFDoS)	1.1		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluorooctanesulfonamide (FOSA)	1.0		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	5.3		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND *1		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5B

Lab Sample ID: 320-104757-4

Date Collected: 09/06/23 11:30

Matrix: Solid

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
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	4.9		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	2.2		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
6:2 FTUCA	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.97		ug/Kg		09/19/23 22:00	09/23/23 12:12	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	121		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C4 PFBA	29		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C5 PFPeA	93		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C2 PFHxA	104		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C4 PFHpA	106		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C4 PFOA	96		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C5 PFNA	72		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C2 PFDA	100		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C2 PFUnA	107		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C2 PFDoA	102		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C2 PFTeDA	82		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C2 PFHxDA	41		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C3 PFBS	104		25 - 150	09/19/23 22:00	09/23/23 12:12	1
18O2 PFHxS	112		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C4 PFOS	68		25 - 150	09/19/23 22:00	09/23/23 12:12	1
d5-NEtFOSAA	120		25 - 150	09/19/23 22:00	09/23/23 12:12	1
d3-NMeFOSAA	121		25 - 150	09/19/23 22:00	09/23/23 12:12	1
M2-4:2 FTS	102		25 - 150	09/19/23 22:00	09/23/23 12:12	1
M2-8:2 FTS	121		25 - 150	09/19/23 22:00	09/23/23 12:12	1
d-N-MeFOSA-M	107		25 - 150	09/19/23 22:00	09/23/23 12:12	1
d-N-EtFOSA-M	115		25 - 150	09/19/23 22:00	09/23/23 12:12	1
d7-N-MeFOSE-M	81		25 - 150	09/19/23 22:00	09/23/23 12:12	1
d9-N-EtFOSE-M	86		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C3 HFPO-DA	89		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C-6:2 FTCA	110		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C-8:2 FTCA	113		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C2 10:2 FTS	126		25 - 150	09/19/23 22:00	09/23/23 12:12	1
13C-6:2 FTUCA	134		25 - 150	09/19/23 22:00	09/23/23 12:12	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5B

Lab Sample ID: 320-104757-4

Date Collected: 09/06/23 11:30

Matrix: Solid

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
Perfluorooctanesulfonic acid (PFOS)	670		19		ug/Kg		09/19/23 22:00	09/29/23 04:33	20
Isotope Dilution									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOS	94		25 - 150				09/19/23 22:00	09/29/23 04:33	20
M2-4:2 FTS	114		25 - 150				09/19/23 22:00	09/29/23 04:33	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	6.1		0.97		ug/Kg		09/19/23 22:00	10/17/23 07:32	1
Isotope Dilution									
	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-4:2 FTS	62		25 - 150				09/19/23 22:00	10/17/23 07:32	1
M2-6:2 FTS	100		25 - 150				09/19/23 22:00	10/17/23 07:32	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	41	+	0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluoroheptanoic acid (PFHpA)	6.6	+	0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorooctanoic acid (PFOA)	11		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorononanoic acid (PFNA)	5.9	+	0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorodecanoic acid (PFDA)	3.2	+	0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluoroundecanoic acid (PFUnA)	2.9		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorododecanoic acid (PFDoA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorotridecanoic acid (PFTrDA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorobutanesulfonic acid (PFBS)	6.7		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluoropentanesulfonic acid (PFPeS)	5.1		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorohexanesulfonic acid (PFHxS)	35		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluoroheptanesulfonic acid (PFHpS)	4.9		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorononanesulfonic acid (PFNS)	2.8		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorodecanesulfonic acid (PFDS)	1.8		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluorooctanesulfonamide (FOSA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5B

Lab Sample ID: 320-104757-4

Date Collected: 09/06/23 11:30

Matrix: Solid

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
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
6:2 FTUCA	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.97		ug/Kg		09/19/23 21:50	09/23/23 08:39	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	122		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C4 PFBA	38		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C5 PFPeA	106		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C2 PFHxA	102		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C4 PFHpA	105		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C4 PFOA	97		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C5 PFNA	78		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C2 PFDA	102		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C2 PFUnA	107		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C2 PFDoA	99		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C2 PFTeDA	103		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C2 PFHxDA	94		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C3 PFBS	103		25 - 150	09/19/23 21:50	09/23/23 08:39	1
18O2 PFHxS	107		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C4 PFOS	73		25 - 150	09/19/23 21:50	09/23/23 08:39	1
d5-NEtFOSAA	112		25 - 150	09/19/23 21:50	09/23/23 08:39	1
d3-NMeFOSAA	114		25 - 150	09/19/23 21:50	09/23/23 08:39	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	09/23/23 08:39	1
M2-6:2 FTS	103		25 - 150	09/19/23 21:50	09/23/23 08:39	1
M2-8:2 FTS	100		25 - 150	09/19/23 21:50	09/23/23 08:39	1
d-N-MeFOSA-M	109		25 - 150	09/19/23 21:50	09/23/23 08:39	1
d-N-EtFOSA-M	108		25 - 150	09/19/23 21:50	09/23/23 08:39	1
d7-N-MeFOSE-M	97		25 - 150	09/19/23 21:50	09/23/23 08:39	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5B

Lab Sample ID: 320-104757-4

Date Collected: 09/06/23 11:30

Matrix: Solid

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
d9-N-EtFOSE-M	99		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C3 HFPO-DA	91		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C-6:2 FTCA	102		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C-8:2 FTCA	107		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C2 10:2 FTS	119		25 - 150	09/19/23 21:50	09/23/23 08:39	1
13C-6:2 FTUCA	132		25 - 150	09/19/23 21:50	09/23/23 08:39	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	530		19		ug/Kg		09/19/23 21:50	09/29/23 02:52	20

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFOS	105		25 - 150	09/19/23 21:50	09/29/23 02:52	20
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	09/29/23 02:52	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	14		0.97		ug/Kg		09/19/23 21:50	10/17/23 12:04	1
Perfluoropentanoic acid (PFPeA)	18	+	0.97		ug/Kg		09/19/23 21:50	10/17/23 12:04	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.97		ug/Kg		09/19/23 21:50	10/17/23 12:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	37		25 - 150	09/19/23 21:50	10/17/23 12:04	1
13C5 PFPeA	101		25 - 150	09/19/23 21:50	10/17/23 12:04	1
13C4 PFOS	77		25 - 150	09/19/23 21:50	10/17/23 12:04	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	10/17/23 12:04	1

Method: Lab SOP CIC EOF - Extractable Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Extractable Organic Fluorine (EOF)	ND	H	500		ng/g		11/08/23 13:11	11/10/23 03:36	1

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Incremented sample generated (EPA Increment, Prep)	1.0				NONE			09/13/23 14:08	1

Client Sample ID: KFTA-DU5C

Lab Sample ID: 320-104757-5

Date Collected: 09/06/23 11:30

Matrix: Solid

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)	13		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluoropentanoic acid (PFPeA)	18		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorohexanoic acid (PFHxA)	21		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluoroheptanoic acid (PFHpA)	2.6		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorooctanoic acid (PFOA)	4.3		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorononanoic acid (PFNA)	5.0		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorodecanoic acid (PFDA)	3.3		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluoroundecanoic acid (PFUnA)	3.1		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5C

Lab Sample ID: 320-104757-5

Date Collected: 09/06/23 11:30

Matrix: Solid

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
Perfluorododecanoic acid (PFDoA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorotridecanoic acid (PFTrDA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorobutanesulfonic acid (PFBS)	16		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluoropentanesulfonic acid (PFPeS)	11		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorohexanesulfonic acid (PFHxS)	67		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluoroheptanesulfonic acid (PFHpS)	8.3		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorononanesulfonic acid (PFNS)	3.8		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorodecanesulfonic acid (PFDS)	2.4		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorododecanesulfonic acid (PFDoS)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluorooctanesulfonamide (FOSA)	1.1		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	6.5		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND *1		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	4.5		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	2.1		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
6:2 FTUCA	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5C

Lab Sample ID: 320-104757-5

Date Collected: 09/06/23 11:30

Matrix: Solid

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
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Nonfluoro-3,6-dioxahexanoic acid (NFDHA)	ND		0.99		ug/Kg		09/19/23 22:00	09/23/23 12:23	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	123		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C4 PFBA	31		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C5 PFPeA	97		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C2 PFHxA	105		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C4 PFHpA	106		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C4 PFOA	107		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C5 PFNA	70		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C2 PFDA	105		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C2 PFUnA	109		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C2 PFDoA	108		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C2 PFTeDA	89		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C2 PFHxDA	50		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C3 PFBS	104		25 - 150				09/19/23 22:00	09/23/23 12:23	1
18O2 PFHxS	107		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C4 PFOS	65		25 - 150				09/19/23 22:00	09/23/23 12:23	1
d5-NEtFOSAA	118		25 - 150				09/19/23 22:00	09/23/23 12:23	1
d3-NMeFOSAA	112		25 - 150				09/19/23 22:00	09/23/23 12:23	1
M2-4:2 FTS	100		25 - 150				09/19/23 22:00	09/23/23 12:23	1
M2-8:2 FTS	113		25 - 150				09/19/23 22:00	09/23/23 12:23	1
d-N-MeFOSA-M	105		25 - 150				09/19/23 22:00	09/23/23 12:23	1
d-N-EtFOSA-M	114		25 - 150				09/19/23 22:00	09/23/23 12:23	1
d7-N-MeFOSE-M	90		25 - 150				09/19/23 22:00	09/23/23 12:23	1
d9-N-EtFOSE-M	93		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C3 HFPO-DA	97		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C-6:2 FTCA	106		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C-8:2 FTCA	113		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C2 10:2 FTS	121		25 - 150				09/19/23 22:00	09/23/23 12:23	1
13C-6:2 FTUCA	131		25 - 150				09/19/23 22:00	09/23/23 12:23	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	720		20		ug/Kg		09/19/23 22:00	09/29/23 04:44	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOS	102		25 - 150				09/19/23 22:00	09/29/23 04:44	20
M2-4:2 FTS	92		25 - 150				09/19/23 22:00	09/29/23 04:44	20

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	6.2		0.99		ug/Kg		09/19/23 22:00	10/17/23 07:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
M2-4:2 FTS	92		25 - 150				09/19/23 22:00	10/17/23 07:43	1
M2-6:2 FTS	106		25 - 150				09/19/23 22:00	10/17/23 07:43	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5C

Lab Sample ID: 320-104757-5

Date Collected: 09/06/23 11:30

Matrix: Solid

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
Perfluorohexanoic acid (PFHxA)	45	+	0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluoroheptanoic acid (PFHpA)	7.6	+	0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorooctanoic acid (PFOA)	10		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorononanoic acid (PFNA)	5.9	+	0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorodecanoic acid (PFDA)	3.8	+	0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluoroundecanoic acid (PFUnA)	3.1		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorododecanoic acid (PFDoA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorotridecanoic acid (PFTrDA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorobutanesulfonic acid (PFBS)	14		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluoropentanesulfonic acid (PFPeS)	11		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorohexanesulfonic acid (PFHxS)	64		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluoroheptanesulfonic acid (PFHpS)	7.1		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorononanesulfonic acid (PFNS)	3.4		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorodecanesulfonic acid (PFDS)	2.6		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorododecanesulfonic acid (PFDoS)	1.0		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluorooctanesulfonamide (FOSA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
N-Methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
N-Ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5C

Lab Sample ID: 320-104757-5

Date Collected: 09/06/23 11:30

Matrix: Solid

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		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
6:2 FTUCA	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		0.99		ug/Kg		09/19/23 21:50	09/23/23 08:50	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	118		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C4 PFBA	27		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C5 PFPeA	98		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C2 PFHxA	97		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C4 PFHpA	100		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C4 PFOA	100		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C5 PFNA	72		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C2 PFDA	100		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C2 PFUnA	101		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C2 PFDoA	102		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C2 PFTeDA	99		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C2 PFHxDA	92		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C3 PFBS	106		25 - 150				09/19/23 21:50	09/23/23 08:50	1
18O2 PFHxS	98		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C4 PFOS	68		25 - 150				09/19/23 21:50	09/23/23 08:50	1
d5-NEtFOSAA	117		25 - 150				09/19/23 21:50	09/23/23 08:50	1
d3-NMeFOSAA	107		25 - 150				09/19/23 21:50	09/23/23 08:50	1
M2-4:2 FTS	0		0 - 10				09/19/23 21:50	09/23/23 08:50	1
M2-6:2 FTS	90		25 - 150				09/19/23 21:50	09/23/23 08:50	1
M2-8:2 FTS	93		25 - 150				09/19/23 21:50	09/23/23 08:50	1
d-N-MeFOSA-M	112		25 - 150				09/19/23 21:50	09/23/23 08:50	1
d-N-EtFOSA-M	110		25 - 150				09/19/23 21:50	09/23/23 08:50	1
d7-N-MeFOSE-M	96		25 - 150				09/19/23 21:50	09/23/23 08:50	1
d9-N-EtFOSE-M	97		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C3 HFPO-DA	90		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C-6:2 FTCA	99		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C-8:2 FTCA	111		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C2 10:2 FTS	99		25 - 150				09/19/23 21:50	09/23/23 08:50	1
13C-6:2 FTUCA	126		25 - 150				09/19/23 21:50	09/23/23 08:50	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	740		20		ug/Kg		09/19/23 21:50	09/29/23 03:04	20
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFOS	95		25 - 150				09/19/23 21:50	09/29/23 03:04	20
M2-4:2 FTS	0		0 - 10				09/19/23 21:50	09/29/23 03:04	20

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Client Sample Results

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5C

Lab Sample ID: 320-104757-5

Date Collected: 09/06/23 11:30

Matrix: Solid

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)	16		0.99		ug/Kg		09/19/23 21:50	10/17/23 12:15	1
Perfluoropentanoic acid (PFPeA)	21	*+	0.99		ug/Kg		09/19/23 21:50	10/17/23 12:15	1
11-Chloroeicosfluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		0.99		ug/Kg		09/19/23 21:50	10/17/23 12:15	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	97		25 - 150				09/19/23 21:50	10/17/23 12:15	1
13C5 PFPeA	100		25 - 150				09/19/23 21:50	10/17/23 12:15	1
13C4 PFOS	64		25 - 150				09/19/23 21:50	10/17/23 12:15	1
M2-4:2 FTS	0		0 - 10				09/19/23 21:50	10/17/23 12:15	1

Method: Lab SOP CIC EOF - Extractable Organic Fluorine by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Extractable Organic Fluorine (EOF)	990	H	500		ng/g		11/08/23 13:11	11/10/23 04:55	1

General Chemistry

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Incremented sample generated (EPA Increment, Prep)	1.0				NONE			09/13/23 14:08	1

Client Sample ID: KFTA-DU5A SPLP LEACHATE

Lab Sample ID: 320-104757-6

Date Collected: 09/06/23 11:30

Matrix: Water

Date Received: 09/12/23 09:30

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)	10		4.0		ug/L		10/09/23 13:39	10/09/23 17:12	1

Client Sample ID: SPLP lab blank

Lab Sample ID: 320-104757-7

Date Collected: 09/06/23 11:30

Matrix: Water

Date Received: 09/12/23 09:30

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		10/02/23 10:31	10/03/23 18:36	1

Isotope Dilution Summary

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

Job ID: 320-104757-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: Pre-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)
320-104757-1	KFTA-DU5A	126	42	91	102	114	104	70	108
320-104757-1 - DL	KFTA-DU5A								
320-104757-1 - RE	KFTA-DU5A								
320-104757-2	KFTA-DU5A DUPLICATE	133	26	93	105	117	112	76	111
320-104757-2 - DL	KFTA-DU5A DUPLICATE								
320-104757-2 - RE	KFTA-DU5A DUPLICATE								
320-104757-3	KFTA-DU5A TRIPLICATE	123	73	92	97	108	96	69	105
320-104757-3 - DL	KFTA-DU5A TRIPLICATE								
320-104757-3 - RE	KFTA-DU5A TRIPLICATE								
320-104757-4	KFTA-DU5B	121	29	93	104	106	96	72	100
320-104757-4 - DL	KFTA-DU5B								
320-104757-4 - RE	KFTA-DU5B								
320-104757-5	KFTA-DU5C	123	31	97	105	106	107	70	105
320-104757-5 - DL	KFTA-DU5C								
320-104757-5 - RE	KFTA-DU5C								
LB 320-716087/4-A	Method Blank	67	74	74	80	77	81	80	79
LCS 320-707544/2-A	Lab Control Sample	117	24 *5-	100	100	110	105	96	99
LCS 320-710937/2-A	Lab Control Sample								
LCS 320-716087/2-A	Lab Control Sample	54	72	73	74	78	73	74	73
LCSD 320-707544/3-A	Lab Control Sample Dup	119	25	96	102	108	100	96	103
LCSD 320-710937/3-A	Lab Control Sample Dup								
LCSD 320-716087/3-A	Lab Control Sample Dup	63	73	78	72	75	76	73	76
MB 320-707544/1-A	Method Blank	110	42	85	97	99	90	88	90
MB 320-710937/1-A	Method Blank								
MB 320-716087/1-A	Method Blank	63	75	77	77	80	78	76	77
		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
320-104757-1	KFTA-DU5A	108	111	92	49	110	118	66	122
320-104757-1 - DL	KFTA-DU5A							84	
320-104757-1 - RE	KFTA-DU5A								
320-104757-2	KFTA-DU5A DUPLICATE	112	110	89	48	118	121	71	132
320-104757-2 - DL	KFTA-DU5A DUPLICATE							106	
320-104757-2 - RE	KFTA-DU5A DUPLICATE								
320-104757-3	KFTA-DU5A TRIPLICATE	105	107	89	46	111	113	68	123
320-104757-3 - DL	KFTA-DU5A TRIPLICATE							93	
320-104757-3 - RE	KFTA-DU5A TRIPLICATE								
320-104757-4	KFTA-DU5B	107	102	82	41	104	112	68	120
320-104757-4 - DL	KFTA-DU5B							94	
320-104757-4 - RE	KFTA-DU5B								
320-104757-5	KFTA-DU5C	109	108	89	50	104	107	65	118
320-104757-5 - DL	KFTA-DU5C							102	
320-104757-5 - RE	KFTA-DU5C								
LB 320-716087/4-A	Method Blank	79	75	74	56	67	73	67	67
LCS 320-707544/2-A	Lab Control Sample	101	100	99	68	107	108	97	109
LCS 320-710937/2-A	Lab Control Sample								
LCS 320-716087/2-A	Lab Control Sample	73	65	70	58	65	67	62	59
LCSD 320-707544/3-A	Lab Control Sample Dup	105	94	95	75	98	111	97	107
LCSD 320-710937/3-A	Lab Control Sample Dup								

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Isotope Dilution Summary

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

Job ID: 320-104757-1

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

Matrix: Solid

Prep Type: Pre-Treatment

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFU _n A (25-150)	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
LCSD 320-716087/3-A	Lab Control Sample Dup	73	72	71	56	64	70	64	62
MB 320-707544/1-A	Method Blank	98	96	95	80	95	105	93	109
MB 320-710937/1-A	Method Blank								
MB 320-716087/1-A	Method Blank	78	74	78	61	66	71	64	65

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)
320-104757-1	KFTA-DU5A	117	116		125	115	125	86	83
320-104757-1 - DL	KFTA-DU5A		88						
320-104757-1 - RE	KFTA-DU5A		92	100					
320-104757-2	KFTA-DU5A DUPLICATE	123	123		117	124	125	91	92
320-104757-2 - DL	KFTA-DU5A DUPLICATE		106						
320-104757-2 - RE	KFTA-DU5A DUPLICATE		75	103					
320-104757-3	KFTA-DU5A TRIPLICATED	123	108		115	112	113	84	82
320-104757-3 - DL	KFTA-DU5A TRIPLICATED		90						
320-104757-3 - RE	KFTA-DU5A TRIPLICATED		87	101					
320-104757-4	KFTA-DU5B	121	102		121	107	115	81	86
320-104757-4 - DL	KFTA-DU5B		114						
320-104757-4 - RE	KFTA-DU5B		62	100					
320-104757-5	KFTA-DU5C	112	100		113	105	114	90	93
320-104757-5 - DL	KFTA-DU5C		92						
320-104757-5 - RE	KFTA-DU5C		92	106					
LB 320-716087/4-A	Method Blank	60	74	78	81	52	46	61	60
LCS 320-707544/2-A	Lab Control Sample	106	93		88	117	120	100	100
LCS 320-710937/2-A	Lab Control Sample			92					
LCS 320-716087/2-A	Lab Control Sample	60	70	69	62	52	47	60	61
LCSD 320-707544/3-A	Lab Control Sample Dup	102	100		95	107	118	95	100
LCSD 320-710937/3-A	Lab Control Sample Dup			102					
LCSD 320-716087/3-A	Lab Control Sample Dup	60	69	69	74	53	55	58	63
MB 320-707544/1-A	Method Blank	102	104		88	102	114	94	89
MB 320-710937/1-A	Method Blank			96					
MB 320-716087/1-A	Method Blank	62	71	71	69	54	54	63	61

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)
320-104757-1	KFTA-DU5A	98	111	106	133	133
320-104757-1 - DL	KFTA-DU5A					
320-104757-1 - RE	KFTA-DU5A					
320-104757-2	KFTA-DU5A DUPLICATE	97	112	118	143	140
320-104757-2 - DL	KFTA-DU5A DUPLICATE					
320-104757-2 - RE	KFTA-DU5A DUPLICATE					
320-104757-3	KFTA-DU5A TRIPLICATED	90	114	114	123	134
320-104757-3 - DL	KFTA-DU5A TRIPLICATED					
320-104757-3 - RE	KFTA-DU5A TRIPLICATED					
320-104757-4	KFTA-DU5B	89	110	113	126	134
320-104757-4 - DL	KFTA-DU5B					
320-104757-4 - RE	KFTA-DU5B					
320-104757-5	KFTA-DU5C	97	106	113	121	131
320-104757-5 - DL	KFTA-DU5C					

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Isotope Dilution Summary

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

Job ID: 320-104757-1

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

Matrix: Solid

Prep Type: Pre-Treatment

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)
320-104757-5 - RE	KFTA-DU5C					
LB 320-716087/4-A	Method Blank	73	50	48	85	92
LCS 320-707544/2-A	Lab Control Sample	86	112	112	94	132
LCS 320-710937/2-A	Lab Control Sample					
LCS 320-716087/2-A	Lab Control Sample	70	44	44	67	84
LCSD 320-707544/3-A	Lab Control Sample Dup	97	108	106	108	126
LCSD 320-710937/3-A	Lab Control Sample Dup					
LCSD 320-716087/3-A	Lab Control Sample Dup	73	47	47	79	86
MB 320-707544/1-A	Method Blank	85	100	106	102	119
MB 320-710937/1-A	Method Blank					
MB 320-716087/1-A	Method Blank	73	48	47	69	90

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: Solid

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)
320-104757-1	KFTA-DU5A	120	86	104	103	105	105	74	103
320-104757-1 - DL	KFTA-DU5A								

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Isotope Dilution Summary

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

Job ID: 320-104757-1

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

Matrix: Solid

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)
320-104757-1 - RE	KFTA-DU5A		54	91					
320-104757-2	KFTA-DU5A DUPLICATE	131	40	104	104	104	101	69	100
320-104757-2 - DL	KFTA-DU5A DUPLICATE								
320-104757-2 - RE	KFTA-DU5A DUPLICATE		35	93					
320-104757-3	KFTA-DU5A TRIPLICATE	132	26	108	105	106	108	80	111
320-104757-3 - DL	KFTA-DU5A TRIPLICATE								
320-104757-3 - RE	KFTA-DU5A TRIPLICATE		55	98					
320-104757-4	KFTA-DU5B	122	38	106	102	105	97	78	102
320-104757-4 - DL	KFTA-DU5B								
320-104757-4 - RE	KFTA-DU5B		37	101					
320-104757-5	KFTA-DU5C	118	27	98	97	100	100	72	100
320-104757-5 - DL	KFTA-DU5C								
320-104757-5 - RE	KFTA-DU5C		97	100					
LB 320-716086/4-A	Method Blank	66	53	74	78	76	75	73	71
LCS 320-707542/2-A	Lab Control Sample	134	92	115	112	110	108	108	110
LCS 320-707730/2-A	Lab Control Sample			118	109				
LCS 320-710936/2-A	Lab Control Sample		96	104					
LCS 320-716086/2-A	Lab Control Sample	61	66	81	79	79	77	82	79
LCSD 320-707542/3-A	Lab Control Sample Dup	129	100	114	109	114	104	105	114
LCSD 320-707730/3-A	Lab Control Sample Dup			97	109				
LCSD 320-710936/3-A	Lab Control Sample Dup		55	102					
LCSD 320-716086/3-A	Lab Control Sample Dup	70	31	80	80	79	81	78	81
MB 320-707542/1-A	Method Blank	131	35	112	103	119	107	102	113
MB 320-707730/1-A	Method Blank			116	111				
MB 320-710936/1-A	Method Blank		60	95					
MB 320-716086/1-A	Method Blank	66	54	74	75	77	76	76	82

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
320-104757-1	KFTA-DU5A	100	104	111	93	114	110	69	120
320-104757-1 - DL	KFTA-DU5A							103	
320-104757-1 - RE	KFTA-DU5A							67	
320-104757-2	KFTA-DU5A DUPLICATE	105	95	108	94	111	111	68	117
320-104757-2 - DL	KFTA-DU5A DUPLICATE							109	
320-104757-2 - RE	KFTA-DU5A DUPLICATE							69	
320-104757-3	KFTA-DU5A TRIPLICATE	115	106	109	101	121	118	73	130
320-104757-3 - DL	KFTA-DU5A TRIPLICATE							86	
320-104757-3 - RE	KFTA-DU5A TRIPLICATE							72	
320-104757-4	KFTA-DU5B	107	99	103	94	103	107	73	112
320-104757-4 - DL	KFTA-DU5B							105	
320-104757-4 - RE	KFTA-DU5B							77	
320-104757-5	KFTA-DU5C	101	102	99	92	106	98	68	117
320-104757-5 - DL	KFTA-DU5C							95	
320-104757-5 - RE	KFTA-DU5C							64	
LB 320-716086/4-A	Method Blank	65	62	65	52	68	70	59	62
LCS 320-707542/2-A	Lab Control Sample	108	109	106	108	119	115	110	114
LCS 320-707730/2-A	Lab Control Sample								
LCS 320-710936/2-A	Lab Control Sample								
LCS 320-716086/2-A	Lab Control Sample	79	70	69	60	68	73	66	63
LCSD 320-707542/3-A	Lab Control Sample Dup	111	109	127	104	119	113	114	131

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Isotope Dilution Summary

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

Job ID: 320-104757-1

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

Matrix: Solid

Prep Type: Post-Treatment

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
LCSD 320-707730/3-A	Lab Control Sample Dup								
LCSD 320-710936/3-A	Lab Control Sample Dup								
LCSD 320-716086/3-A	Lab Control Sample Dup	81	80	72	61	73	76	68	76
MB 320-707542/1-A	Method Blank	116	111	116	104	118	119	111	132
MB 320-707730/1-A	Method Blank								
MB 320-710936/1-A	Method Blank								
MB 320-716086/1-A	Method Blank	77	75	71	61	68	69	66	69
		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)
320-104757-1	KFTA-DU5A	111	0	96	97	104	106	102	97
320-104757-1 - DL	KFTA-DU5A		0						
320-104757-1 - RE	KFTA-DU5A		0						
320-104757-2	KFTA-DU5A DUPLICATE	108	0	104	92	110	110	94	89
320-104757-2 - DL	KFTA-DU5A DUPLICATE		0						
320-104757-2 - RE	KFTA-DU5A DUPLICATE		0						
320-104757-3	KFTA-DU5A TRIPLICATED	114	0	106	102	113	121	102	100
320-104757-3 - DL	KFTA-DU5A TRIPLICATED		0						
320-104757-3 - RE	KFTA-DU5A TRIPLICATED		0						
320-104757-4	KFTA-DU5B	114	0	103	100	109	108	97	99
320-104757-4 - DL	KFTA-DU5B		0						
320-104757-4 - RE	KFTA-DU5B		0						
320-104757-5	KFTA-DU5C	107	0	90	93	112	110	96	97
320-104757-5 - DL	KFTA-DU5C		0						
320-104757-5 - RE	KFTA-DU5C		0						
LB 320-716086/4-A	Method Blank	58	0	66	70	58	55	50	44
LCS 320-707542/2-A	Lab Control Sample	114	0	109	101	120	108	108	106
LCS 320-707730/2-A	Lab Control Sample		0						
LCS 320-710936/2-A	Lab Control Sample		0						
LCS 320-716086/2-A	Lab Control Sample	66	0	78	70	44	43	59	56
LCSD 320-707542/3-A	Lab Control Sample Dup	119	0	101	96	108	110	110	113
LCSD 320-707730/3-A	Lab Control Sample Dup		0						
LCSD 320-710936/3-A	Lab Control Sample Dup		0						
LCSD 320-716086/3-A	Lab Control Sample Dup	66	0	76	73	65	57	60	56
MB 320-707542/1-A	Method Blank	124	0	99	104	115	124	107	103
MB 320-707730/1-A	Method Blank		0						
MB 320-710936/1-A	Method Blank		0						
MB 320-716086/1-A	Method Blank	64	0	72	73	56	55	56	52
		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)			
320-104757-1	KFTA-DU5A	88	110	118	111	131			
320-104757-1 - DL	KFTA-DU5A								
320-104757-1 - RE	KFTA-DU5A								
320-104757-2	KFTA-DU5A DUPLICATE	90	114	113	117	125			
320-104757-2 - DL	KFTA-DU5A DUPLICATE								
320-104757-2 - RE	KFTA-DU5A DUPLICATE								
320-104757-3	KFTA-DU5A TRIPLICATED	91	112	118	118	135			
320-104757-3 - DL	KFTA-DU5A TRIPLICATED								

Isotope Dilution Summary

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

Job ID: 320-104757-1

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

Matrix: Solid

Prep Type: Post-Treatment

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)
320-104757-3 - RE	KFTA-DU5A TRIPLICATE					
320-104757-4	KFTA-DU5B	91	102	107	119	132
320-104757-4 - DL	KFTA-DU5B					
320-104757-4 - RE	KFTA-DU5B					
320-104757-5	KFTA-DU5C	90	99	111	99	126
320-104757-5 - DL	KFTA-DU5C					
320-104757-5 - RE	KFTA-DU5C					
LB 320-716086/4-A	Method Blank	66	49	43	65	88
LCS 320-707542/2-A	Lab Control Sample	93	106	116	120	138
LCS 320-707730/2-A	Lab Control Sample	99				
LCS 320-710936/2-A	Lab Control Sample					
LCS 320-716086/2-A	Lab Control Sample	69	49	48	68	94
LCSD 320-707542/3-A	Lab Control Sample Dup	100	113	116	116	136
LCSD 320-707730/3-A	Lab Control Sample Dup	91				
LCSD 320-710936/3-A	Lab Control Sample Dup					
LCSD 320-716086/3-A	Lab Control Sample Dup	69	50	50	81	94
MB 320-707542/1-A	Method Blank	94	103	127	119	132
MB 320-707730/1-A	Method Blank	98				
MB 320-710936/1-A	Method Blank					
MB 320-716086/1-A	Method Blank	60	50	48	70	90

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
 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

Isotope Dilution Summary

Client: Hawaii Department of Health
 Project/Site: Kahalui Fire Training Pit Study
 MFHUEA = 13C-6:2 FTUCA

Job ID: 320-104757-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid

Prep Type: SPLP West

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)
320-104757-1 - IN2	KFTA-DU5A			102					
320-104757-1 - IN3	KFTA-DU5A	63	25	77	73	79	73	70	67
320-104757-2 - IN2	KFTA-DU5A DUPLICATE			108	106				
320-104757-2 - IN3	KFTA-DU5A DUPLICATE	64	23 *5-	74	74	79	76	72	71
320-104757-3 - IN2	KFTA-DU5A TRIPLICATED			93	91				
320-104757-3 - IN3	KFTA-DU5A TRIPLICATED	54	69	75	73	75	77	72	67

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
320-104757-1 - IN2	KFTA-DU5A				105				
320-104757-1 - IN3	KFTA-DU5A	65	64	59	41	66	71	60	61
320-104757-2 - IN2	KFTA-DU5A DUPLICATE								
320-104757-2 - IN3	KFTA-DU5A DUPLICATE	70	70	67	55	69	74	61	63
320-104757-3 - IN2	KFTA-DU5A TRIPLICATED								
320-104757-3 - IN3	KFTA-DU5A TRIPLICATED	67	62	64	59	66	69	58	55

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)
320-104757-1 - IN2	KFTA-DU5A		85 *5+						
320-104757-1 - IN3	KFTA-DU5A	56	0	71	65	59	55	51	48
320-104757-2 - IN2	KFTA-DU5A DUPLICATE		88 *5+						
320-104757-2 - IN3	KFTA-DU5A DUPLICATE	60	0	69	69	60	51	53	51
320-104757-3 - IN2	KFTA-DU5A TRIPLICATED		68 *5+						
320-104757-3 - IN3	KFTA-DU5A TRIPLICATED	50	0	65	66	44	41	54	48

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)
320-104757-1 - IN2	KFTA-DU5A	98				
320-104757-1 - IN3	KFTA-DU5A	57	46	41	65	88
320-104757-2 - IN2	KFTA-DU5A DUPLICATE	100				
320-104757-2 - IN3	KFTA-DU5A DUPLICATE	67	47	44	62	89
320-104757-3 - IN2	KFTA-DU5A TRIPLICATED	97				
320-104757-3 - IN3	KFTA-DU5A TRIPLICATED	65	48	39	58	87

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

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Isotope Dilution Summary

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

Job ID: 320-104757-1

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: Solid

Prep Type: SPLP West

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)
320-104757-1 - RE3	KFTA-DU5A	58	72	79	78	75	75	76	75
320-104757-2 - RE3	KFTA-DU5A DUPLICATE	50	75	77	78	80	81	74	71
320-104757-3 - RE3	KFTA-DU5A TRIPLICATE	60	70	78	77	83	80	77	78

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)
320-104757-1 - RE3	KFTA-DU5A	68	65	55	46	70	74	64	57
320-104757-2 - RE3	KFTA-DU5A DUPLICATE	62	61	56	48	67	70	61	55
320-104757-3 - RE3	KFTA-DU5A TRIPLICATE	71	71	63	49	69	71	64	65

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d3NMFOS (25-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	dMeFOSA (25-150)	dEtFOSA (25-150)	NMFM (25-150)	NEFM (25-150)
320-104757-1 - RE3	KFTA-DU5A	58	81	77	66	45	46	49	43
320-104757-2 - RE3	KFTA-DU5A DUPLICATE	54	65	71	70	40	41	48	42
320-104757-3 - RE3	KFTA-DU5A TRIPLICATE	55	81	77	71	43	46	52	53

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)
320-104757-1 - RE3	KFTA-DU5A	65	48	48	64	87
320-104757-2 - RE3	KFTA-DU5A DUPLICATE	66	48	47	62	88
320-104757-3 - RE3	KFTA-DU5A TRIPLICATE	65	51	49	68	91

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

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Isotope Dilution Summary

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

Job ID: 320-104757-1

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

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QC Sample Results

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

Job ID: 320-104757-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-707544/1-A

Matrix: Solid

Analysis Batch: 708499

Client Sample ID: Method Blank

Prep Type: Pre-Treatment

Prep Batch: 707544

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluoropentanoic acid (PFPeA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorohexanoic acid (PFHxA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluoroheptanoic acid (PFHpA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorooctanoic acid (PFOA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorononanoic acid (PFNA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorodecanoic acid (PFDA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluoroundecanoic acid (PFUnA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorododecanoic acid (PFDoA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorotridecanoic acid (PFTrDA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorononanesulfonic acid (PFNS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorodecanesulfonic acid (PFDS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluorooctanesulfonamide (FOSA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: MB 320-707544/1-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Method Blank
Prep Type: Pre-Treatment
Prep Batch: 707544

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
6:2 FTUCA	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.0		ug/Kg		09/19/23 22:00	09/23/23 11:05	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	110		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C4 PFBA	42		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C5 PFPeA	85		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C2 PFHxA	97		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C4 PFHpA	99		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C4 PFOA	90		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C5 PFNA	88		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C2 PFDA	90		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C2 PFUnA	98		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C2 PFDoA	96		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C2 PFTeDA	95		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C2 PFHxDA	80		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C3 PFBS	95		25 - 150	09/19/23 22:00	09/23/23 11:05	1
18O2 PFHxS	105		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C4 PFOS	93		25 - 150	09/19/23 22:00	09/23/23 11:05	1
d5-NEtFOSAA	109		25 - 150	09/19/23 22:00	09/23/23 11:05	1
d3-NMeFOSAA	102		25 - 150	09/19/23 22:00	09/23/23 11:05	1
M2-4:2 FTS	104		25 - 150	09/19/23 22:00	09/23/23 11:05	1
M2-8:2 FTS	88		25 - 150	09/19/23 22:00	09/23/23 11:05	1
d-N-MeFOSA-M	102		25 - 150	09/19/23 22:00	09/23/23 11:05	1
d-N-EtFOSA-M	114		25 - 150	09/19/23 22:00	09/23/23 11:05	1
d7-N-MeFOSE-M	94		25 - 150	09/19/23 22:00	09/23/23 11:05	1
d9-N-EtFOSE-M	89		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C3 HFPO-DA	85		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C-6:2 FTCA	100		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C-8:2 FTCA	106		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C2 10:2 FTS	102		25 - 150	09/19/23 22:00	09/23/23 11:05	1
13C-6:2 FTUCA	119		25 - 150	09/19/23 22:00	09/23/23 11:05	1

Lab Sample ID: LCS 320-707544/2-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample
Prep Type: Pre-Treatment
Prep Batch: 707544

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	10.0	10.6		ug/Kg		106	76 - 136
Perfluoropentanoic acid (PFPeA)	10.0	10.7		ug/Kg		107	69 - 129
Perfluorohexanoic acid (PFHxA)	10.0	10.8		ug/Kg		108	71 - 131

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-707544/2-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample
Prep Type: Pre-Treatment
Prep Batch: 707544

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanoic acid (PFHpA)	10.0	10.9		ug/Kg		109	71 - 131
Perfluorooctanoic acid (PFOA)	10.0	10.5		ug/Kg		105	72 - 132
Perfluorononanoic acid (PFNA)	10.0	10.4		ug/Kg		104	73 - 133
Perfluorodecanoic acid (PFDA)	10.0	11.0		ug/Kg		110	72 - 132
Perfluoroundecanoic acid (PFUnA)	10.0	11.0		ug/Kg		110	66 - 126
Perfluorododecanoic acid (PFDoA)	10.0	11.2		ug/Kg		112	71 - 131
Perfluorotridecanoic acid (PFTrDA)	10.0	11.6		ug/Kg		116	71 - 131
Perfluorotetradecanoic acid (PFTeA)	10.0	9.28		ug/Kg		93	67 - 127
Perfluoro-n-hexadecanoic acid (PFHxDA)	10.0	8.40		ug/Kg		84	75 - 135
Perfluoro-n-octadecanoic acid (PFODA)	10.0	8.43		ug/Kg		84	53 - 130
Perfluorobutanesulfonic acid (PFBS)	8.88	8.31		ug/Kg		94	69 - 129
Perfluoropentanesulfonic acid (PFPeS)	9.40	9.69		ug/Kg		103	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	9.12	9.26		ug/Kg		102	62 - 122
Perfluoroheptanesulfonic acid (PFHpS)	9.54	10.9		ug/Kg		114	76 - 136
Perfluorooctanesulfonic acid (PFOS)	9.30	9.59		ug/Kg		103	68 - 141
Perfluorononanesulfonic acid (PFNS)	9.62	10.7		ug/Kg		111	72 - 132
Perfluorodecanesulfonic acid (PFDS)	9.64	11.1		ug/Kg		115	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	9.70	9.44		ug/Kg		97	70 - 130
Perfluorooctanesulfonamide (FOSA)	10.0	9.41		ug/Kg		94	77 - 137
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	10.7		ug/Kg		107	72 - 132
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	9.55		ug/Kg		96	72 - 132
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	9.38	8.45		ug/Kg		90	68 - 143
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.60	11.2		ug/Kg		117	75 - 135
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	9.66	9.75		ug/Kg		101	69 - 145
N-ethylperfluorooctane sulfonamide (NEtFOSA)	10.0	7.46		ug/Kg		75	47 - 161
N-methylperfluorooctane sulfonamide (NMeFOSA)	10.0	6.68		ug/Kg		67	63 - 148
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	10.0	9.67		ug/Kg		97	43 - 153
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	10.0	10.7		ug/Kg		107	44 - 155

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-707544/2-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample
Prep Type: Pre-Treatment
Prep Batch: 707544

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	9.34	10.0		ug/Kg		108	74 - 134
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	10.0	12.1		ug/Kg		121	53 - 158
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	9.44	9.93		ug/Kg		105	66 - 136
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.46	11.0		ug/Kg		116	79 - 139
3-Perfluoropropylpropanoic acid (3:3 FTCA)	10.0	7.51		ug/Kg		75	50 - 150
3-Perfluoropentylpropanoic acid (5:3 FTCA)	10.0	11.2		ug/Kg		112	50 - 150
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	10.0	9.92		ug/Kg		99	50 - 150
PFECHS	9.24	9.51		ug/Kg		103	50 - 150
PFPrS	9.20	9.19		ug/Kg		100	50 - 150
6:2 FTUCA	10.0	9.57		ug/Kg		96	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	8.92	9.39		ug/Kg		105	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	10.0	5.80		ug/Kg		58	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	10.0	10.6		ug/Kg		106	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.0	9.94		ug/Kg		99	50 - 150

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 FOSA	117		25 - 150
13C4 PFBA	24	*5-	25 - 150
13C5 PFPeA	100		25 - 150
13C2 PFHxA	100		25 - 150
13C4 PFHpA	110		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	96		25 - 150
13C2 PFDA	99		25 - 150
13C2 PFUnA	101		25 - 150
13C2 PFDoA	100		25 - 150
13C2 PFTeDA	99		25 - 150
13C2 PFHxDA	68		25 - 150
13C3 PFBS	107		25 - 150
18O2 PFHxS	108		25 - 150
13C4 PFOS	97		25 - 150
d5-NEtFOSAA	109		25 - 150
d3-NMeFOSAA	106		25 - 150
M2-4:2 FTS	93		25 - 150
M2-8:2 FTS	88		25 - 150
d-N-MeFOSA-M	117		25 - 150
d-N-EtFOSA-M	120		25 - 150
d7-N-MeFOSE-M	100		25 - 150
d9-N-EtFOSE-M	100		25 - 150

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-707544/2-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample
Prep Type: Pre-Treatment
Prep Batch: 707544

<i>Isotope Dilution</i>	<i>LCS %Recovery</i>	<i>LCS Qualifier</i>	<i>Limits</i>
13C3 HFPO-DA	86		25 - 150
13C-6:2 FTCA	112		25 - 150
13C-8:2 FTCA	112		25 - 150
13C2 10:2 FTS	94		25 - 150
13C-6:2 FTUCA	132		25 - 150

Lab Sample ID: LCSD 320-707544/3-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample Dup
Prep Type: Pre-Treatment
Prep Batch: 707544

<i>Analyte</i>	<i>Spike Added</i>	<i>LCSD Result</i>	<i>LCSD Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
Perfluorobutanoic acid (PFBA)	10.0	10.4		ug/Kg		104	76 - 136	2	30
Perfluoropentanoic acid (PFPeA)	10.0	11.7		ug/Kg		117	69 - 129	9	30
Perfluorohexanoic acid (PFHxA)	10.0	10.8		ug/Kg		108	71 - 131	0	30
Perfluoroheptanoic acid (PFHpA)	10.0	10.7		ug/Kg		107	71 - 131	2	30
Perfluorooctanoic acid (PFOA)	10.0	11.3		ug/Kg		113	72 - 132	8	30
Perfluorononanoic acid (PFNA)	10.0	10.7		ug/Kg		107	73 - 133	3	30
Perfluorodecanoic acid (PFDA)	10.0	10.2		ug/Kg		102	72 - 132	8	30
Perfluoroundecanoic acid (PFUnA)	10.0	10.5		ug/Kg		105	66 - 126	4	30
Perfluorododecanoic acid (PFDoA)	10.0	12.4		ug/Kg		124	71 - 131	10	30
Perfluorotridecanoic acid (PFTrDA)	10.0	11.4		ug/Kg		114	71 - 131	2	30
Perfluorotetradecanoic acid (PFTeA)	10.0	10.6		ug/Kg		106	67 - 127	14	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	10.0	9.49		ug/Kg		95	75 - 135	12	30
Perfluoro-n-octadecanoic acid (PFODA)	10.0	9.64		ug/Kg		96	53 - 130	13	30
Perfluorobutanesulfonic acid (PFBS)	8.88	8.92		ug/Kg		100	69 - 129	7	30
Perfluoropentanesulfonic acid (PFPeS)	9.40	10.6		ug/Kg		112	66 - 126	9	30
Perfluorohexanesulfonic acid (PFHxS)	9.12	9.58		ug/Kg		105	62 - 122	3	30
Perfluoroheptanesulfonic acid (PFHpS)	9.54	11.4		ug/Kg		120	76 - 136	5	30
Perfluorooctanesulfonic acid (PFOS)	9.30	10.5		ug/Kg		113	68 - 141	9	30
Perfluorononanesulfonic acid (PFNS)	9.62	11.3		ug/Kg		118	72 - 132	6	30
Perfluorodecanesulfonic acid (PFDS)	9.64	11.2		ug/Kg		116	71 - 131	1	30
Perfluorododecanesulfonic acid (PFDoS)	9.70	10.5		ug/Kg		109	70 - 130	11	30
Perfluorooctanesulfonamide (FOSA)	10.0	9.68		ug/Kg		97	77 - 137	3	30
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	11.5		ug/Kg		115	72 - 132	8	30

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCSD 320-707544/3-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample Dup
Prep Type: Pre-Treatment
Prep Batch: 707544

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	10.7		ug/Kg		107	72 - 132	11	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	9.38	9.08		ug/Kg		97	68 - 143	7	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.60	11.0		ug/Kg		115	75 - 135	2	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	9.66	9.53		ug/Kg		99	69 - 145	2	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	10.0	9.83		ug/Kg		98	47 - 161	27	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	10.0	9.27	*1	ug/Kg		93	63 - 148	32	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	10.0	10.8		ug/Kg		108	43 - 153	11	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	10.0	10.5		ug/Kg		105	44 - 155	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	9.34	10.2		ug/Kg		109	74 - 134	1	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	10.0	11.6		ug/Kg		116	53 - 158	4	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	9.44	10.7		ug/Kg		113	66 - 136	7	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.46	11.0		ug/Kg		116	79 - 139	0	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	10.0	7.91		ug/Kg		79	50 - 150	5	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	10.0	11.4		ug/Kg		114	50 - 150	2	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	10.0	10.3		ug/Kg		103	50 - 150	4	30
PFECHS	9.24	10.4		ug/Kg		113	50 - 150	9	30
PFPrS	9.20	10.4		ug/Kg		113	50 - 150	12	30
6:2 FTUCA	10.0	9.76		ug/Kg		98	50 - 150	2	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	8.92	10.4		ug/Kg		117	50 - 150	11	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	10.0	5.72		ug/Kg		57	50 - 150	1	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	10.0	11.1		ug/Kg		111	50 - 150	5	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.0	11.7		ug/Kg		117	50 - 150	16	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	119		25 - 150
13C4 PFBA	25		25 - 150
13C5 PFPeA	96		25 - 150
13C2 PFHxA	102		25 - 150
13C4 PFHpA	108		25 - 150
13C4 PFOA	100		25 - 150
13C5 PFNA	96		25 - 150
13C2 PFDA	103		25 - 150

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCSD 320-707544/3-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample Dup
Prep Type: Pre-Treatment
Prep Batch: 707544

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C2 PFUnA	105		25 - 150
13C2 PFDoA	94		25 - 150
13C2 PFTeDA	95		25 - 150
13C2 PFHxDA	75		25 - 150
13C3 PFBS	98		25 - 150
18O2 PFHxS	111		25 - 150
13C4 PFOS	97		25 - 150
d5-NEtFOSAA	107		25 - 150
d3-NMeFOSAA	102		25 - 150
M2-4:2 FTS	100		25 - 150
M2-8:2 FTS	95		25 - 150
d-N-MeFOSA-M	107		25 - 150
d-N-EtFOSA-M	118		25 - 150
d7-N-MeFOSE-M	95		25 - 150
d9-N-EtFOSE-M	100		25 - 150
13C3 HFPO-DA	97		25 - 150
13C-6:2 FTCA	108		25 - 150
13C-8:2 FTCA	106		25 - 150
13C2 10:2 FTS	108		25 - 150
13C-6:2 FTUCA	126		25 - 150

Lab Sample ID: MB 320-710937/1-A
Matrix: Solid
Analysis Batch: 713697

Client Sample ID: Method Blank
Prep Type: Pre-Treatment
Prep Batch: 710937

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		1.0		ug/Kg		09/19/23 22:00	10/17/23 06:25	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
M2-6:2 FTS	96		25 - 150	09/19/23 22:00	10/17/23 06:25	1

Lab Sample ID: LCS 320-710937/2-A
Matrix: Solid
Analysis Batch: 713697

Client Sample ID: Lab Control Sample
Prep Type: Pre-Treatment
Prep Batch: 710937

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	9.52	9.94		ug/Kg		104	73 - 139

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
M2-6:2 FTS	92		25 - 150

Lab Sample ID: LCSD 320-710937/3-A
Matrix: Solid
Analysis Batch: 713697

Client Sample ID: Lab Control Sample Dup
Prep Type: Pre-Treatment
Prep Batch: 710937

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
		Result	Qualifier						
6:2 FTUCA	10.0	9.94		ug/Kg		99	50 - 150	0	30

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QC Sample Results

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

Job ID: 320-104757-1

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

Isotope Dilution	LCS D %Recovery	LCS D Qualifier	Limits
M2-6:2 FTS	102		25 - 150

Lab Sample ID: LB 320-716087/4-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Pre-Treatment
Prep Batch: 716087

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		10/26/23 20:32	10/31/23 22:47	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		10/26/23 20:32	10/31/23 22:47	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		10/26/23 20:32	10/31/23 22:47	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		10/26/23 20:32	10/31/23 22:47	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		10/26/23 20:32	10/31/23 22:47	1
11-Chloroeicosafuoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LB 320-716087/4-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Pre-Treatment
Prep Batch: 716087

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
6:2 FTUCA	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:47	1

Isotope Dilution	LB %Recovery	LB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	67		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C4 PFBA	74		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C5 PFPeA	74		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C2 PFHxA	80		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C4 PFHpA	77		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C4 PFOA	81		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C5 PFNA	80		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C2 PFDA	79		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C2 PFUnA	79		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C2 PFDoA	75		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C2 PFTeDA	74		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C2 PFHxDA	56		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C3 PFBS	67		25 - 150	10/26/23 20:32	10/31/23 22:47	1
18O2 PFHxS	73		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C4 PFOS	67		25 - 150	10/26/23 20:32	10/31/23 22:47	1
d5-NEtFOSAA	67		25 - 150	10/26/23 20:32	10/31/23 22:47	1
d3-NMeFOSAA	60		25 - 150	10/26/23 20:32	10/31/23 22:47	1
M2-4:2 FTS	74		25 - 150	10/26/23 20:32	10/31/23 22:47	1
M2-6:2 FTS	78		25 - 150	10/26/23 20:32	10/31/23 22:47	1
M2-8:2 FTS	81		25 - 150	10/26/23 20:32	10/31/23 22:47	1
d-N-MeFOSA-M	52		25 - 150	10/26/23 20:32	10/31/23 22:47	1
d-N-EtFOSA-M	46		25 - 150	10/26/23 20:32	10/31/23 22:47	1
d7-N-MeFOSE-M	61		25 - 150	10/26/23 20:32	10/31/23 22:47	1
d9-N-EtFOSE-M	60		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C3 HFPO-DA	73		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C-6:2 FTCA	50		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C-8:2 FTCA	48		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C2 10:2 FTS	85		25 - 150	10/26/23 20:32	10/31/23 22:47	1
13C-6:2 FTUCA	92		25 - 150	10/26/23 20:32	10/31/23 22:47	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: MB 320-716087/1-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Pre-Treatment
Prep Batch: 716087

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		10/26/23 20:32	10/31/23 22:14	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		10/26/23 20:32	10/31/23 22:14	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		10/26/23 20:32	10/31/23 22:14	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		10/26/23 20:32	10/31/23 22:14	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		10/26/23 20:32	10/31/23 22:14	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: MB 320-716087/1-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Pre-Treatment
Prep Batch: 716087

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
6:2 FTUCA	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 22:14	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	63		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C4 PFBA	75		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C5 PFPeA	77		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C2 PFHxA	77		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C4 PFHpA	80		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C4 PFOA	78		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C5 PFNA	76		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C2 PFDA	77		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C2 PFUnA	78		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C2 PFDoA	74		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C2 PFTeDA	78		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C2 PFHxDA	61		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C3 PFBS	66		25 - 150	10/26/23 20:32	10/31/23 22:14	1
18O2 PFHxS	71		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C4 PFOS	64		25 - 150	10/26/23 20:32	10/31/23 22:14	1
d5-NEtFOSAA	65		25 - 150	10/26/23 20:32	10/31/23 22:14	1
d3-NMeFOSAA	62		25 - 150	10/26/23 20:32	10/31/23 22:14	1
M2-4:2 FTS	71		25 - 150	10/26/23 20:32	10/31/23 22:14	1
M2-6:2 FTS	71		25 - 150	10/26/23 20:32	10/31/23 22:14	1
M2-8:2 FTS	69		25 - 150	10/26/23 20:32	10/31/23 22:14	1
d-N-MeFOSA-M	54		25 - 150	10/26/23 20:32	10/31/23 22:14	1
d-N-EtFOSA-M	54		25 - 150	10/26/23 20:32	10/31/23 22:14	1
d7-N-MeFOSE-M	63		25 - 150	10/26/23 20:32	10/31/23 22:14	1
d9-N-EtFOSE-M	61		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C3 HFPO-DA	73		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C-6:2 FTCA	48		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C-8:2 FTCA	47		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C2 10:2 FTS	69		25 - 150	10/26/23 20:32	10/31/23 22:14	1
13C-6:2 FTUCA	90		25 - 150	10/26/23 20:32	10/31/23 22:14	1

QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-716087/2-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample
Prep Type: Pre-Treatment
Prep Batch: 716087

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	100	116		ng/L		116	76 - 136
Perfluoropentanoic acid (PFPeA)	100	107		ng/L		107	71 - 131
Perfluorohexanoic acid (PFHxA)	100	109		ng/L		109	73 - 133
Perfluoroheptanoic acid (PFHpA)	100	111		ng/L		111	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	114		ng/L		114	76 - 136
Perfluoroundecanoic acid (PFUnA)	100	110		ng/L		110	68 - 128
Perfluorododecanoic acid (PFDoA)	100	119		ng/L		119	71 - 131
Perfluorotridecanoic acid (PFTTrDA)	100	105		ng/L		105	71 - 131
Perfluorotetradecanoic acid (PFTeA)	100	99.5		ng/L		99	70 - 130
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	101		ng/L		101	76 - 136
Perfluoro-n-octadecanoic acid (PFODA)	100	91.4		ng/L		91	58 - 145
Perfluorobutanesulfonic acid (PFBS)	88.8	101		ng/L		114	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	94.0	110		ng/L		117	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	91.2	101		ng/L		111	59 - 119
Perfluoroheptanesulfonic acid (PFHpS)	95.4	111		ng/L		117	76 - 136
Perfluorooctanesulfonic acid (PFOS)	93.0	105		ng/L		113	70 - 130
Perfluorononanesulfonic acid (PFNS)	96.2	97.0		ng/L		101	75 - 135
Perfluorodecanesulfonic acid (PFDS)	96.4	111		ng/L		115	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	97.0	96.5		ng/L		100	67 - 127
Perfluorooctanesulfonamide (FOSA)	100	113		ng/L		113	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	106		ng/L		113	79 - 139
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	105		ng/L		111	59 - 175
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	114		ng/L		119	75 - 135
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	96.6	91.6		ng/L		95	64 - 142
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	92.6		ng/L		93	78 - 138

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-716087/2-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample
Prep Type: Pre-Treatment
Prep Batch: 716087

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	96.2		ng/L		96	67 - 154
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	111		ng/L		111	70 - 130
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	100		ng/L		100	71 - 131
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	93.4	121		ng/L		129	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	108		ng/L		108	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	107		ng/L		113	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	121		ng/L		128	79 - 139
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	124		ng/L		124	70 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	175	*+	ng/L		175	70 - 130
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	164	*+	ng/L		164	70 - 130
PFECHS	92.4	92.8		ng/L		100	70 - 130
PFPPrS	92.0	108		ng/L		117	70 - 130
6:2 FTUCA	100	102		ng/L		102	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	105		ng/L		118	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	109		ng/L		109	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	116		ng/L		116	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	96.4		ng/L		96	70 - 130

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C8 FOSA	54		25 - 150
13C4 PFBA	72		25 - 150
13C5 PFPeA	73		25 - 150
13C2 PFHxA	74		25 - 150
13C4 PFHpA	78		25 - 150
13C4 PFOA	73		25 - 150
13C5 PFNA	74		25 - 150
13C2 PFDA	73		25 - 150
13C2 PFUnA	73		25 - 150
13C2 PFDoA	65		25 - 150
13C2 PFTeDA	70		25 - 150
13C2 PFHxDA	58		25 - 150
13C3 PFBS	65		25 - 150
18O2 PFHxS	67		25 - 150
13C4 PFOS	62		25 - 150
d5-NEtFOSAA	59		25 - 150
d3-NMeFOSAA	60		25 - 150

QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-716087/2-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample
Prep Type: Pre-Treatment
Prep Batch: 716087

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	70		25 - 150
M2-6:2 FTS	69		25 - 150
M2-8:2 FTS	62		25 - 150
d-N-MeFOSA-M	52		25 - 150
d-N-EtFOSA-M	47		25 - 150
d7-N-MeFOSE-M	60		25 - 150
d9-N-EtFOSE-M	61		25 - 150
13C3 HFPO-DA	70		25 - 150
13C-6:2 FTCA	44		25 - 150
13C-8:2 FTCA	44		25 - 150
13C2 10:2 FTS	67		25 - 150
13C-6:2 FTUCA	84		25 - 150

Lab Sample ID: LCSD 320-716087/3-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample Dup
Prep Type: Pre-Treatment
Prep Batch: 716087

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	
							Limits	RPD	RPD	Limit
Perfluorobutanoic acid (PFBA)	100	108		ng/L		108	76 - 136	6	30	
Perfluoropentanoic acid (PFPeA)	100	94.8		ng/L		95	71 - 131	12	30	
Perfluorohexanoic acid (PFHxA)	100	112		ng/L		112	73 - 133	3	30	
Perfluoroheptanoic acid (PFHpA)	100	112		ng/L		112	72 - 132	1	30	
Perfluorooctanoic acid (PFOA)	100	107		ng/L		107	70 - 130	1	30	
Perfluorononanoic acid (PFNA)	100	111		ng/L		111	75 - 135	4	30	
Perfluorodecanoic acid (PFDA)	100	103		ng/L		103	76 - 136	11	30	
Perfluoroundecanoic acid (PFUnA)	100	98.6		ng/L		99	68 - 128	11	30	
Perfluorododecanoic acid (PFDoA)	100	105		ng/L		105	71 - 131	12	30	
Perfluorotridecanoic acid (PFTrDA)	100	89.8		ng/L		90	71 - 131	15	30	
Perfluorotetradecanoic acid (PFTeA)	100	94.0		ng/L		94	70 - 130	6	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	110		ng/L		110	76 - 136	9	30	
Perfluoro-n-octadecanoic acid (PFODA)	100	102		ng/L		102	58 - 145	11	30	
Perfluorobutanesulfonic acid (PFBS)	88.8	105		ng/L		118	67 - 127	3	30	
Perfluoropentanesulfonic acid (PFPeS)	94.0	110		ng/L		117	66 - 126	0	30	
Perfluorohexanesulfonic acid (PFHxS)	91.2	93.5		ng/L		102	59 - 119	8	30	
Perfluoroheptanesulfonic acid (PFHpS)	95.4	106		ng/L		111	76 - 136	5	30	
Perfluorooctanesulfonic acid (PFOS)	93.0	101		ng/L		109	70 - 130	4	30	
Perfluorononanesulfonic acid (PFNS)	96.2	101		ng/L		105	75 - 135	4	30	
Perfluorodecanesulfonic acid (PFDS)	96.4	114		ng/L		118	71 - 131	2	30	

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCSD 320-716087/3-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample Dup
Prep Type: Pre-Treatment
Prep Batch: 716087

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorododecanesulfonic acid (PFDoS)	97.0	93.0		ng/L		96	67 - 127	4	30
Perfluorooctanesulfonamide (FOSA)	100	100		ng/L		100	73 - 133	12	30
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	103		ng/L		103	76 - 136	6	30
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	107		ng/L		107	76 - 136	2	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	104		ng/L		111	79 - 139	2	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	98.0		ng/L		103	59 - 175	7	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	101		ng/L		105	75 - 135	13	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	96.6	90.3		ng/L		93	64 - 142	1	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	84.4		ng/L		84	78 - 138	9	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	86.8		ng/L		87	67 - 154	10	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	107		ng/L		107	70 - 130	4	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	98.0		ng/L		98	71 - 131	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	115		ng/L		124	75 - 135	5	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	104		ng/L		104	51 - 173	4	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	109	*+	ng/L		115	54 - 114	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	112		ng/L		118	79 - 139	8	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	113		ng/L		113	70 - 130	9	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	149	*+	ng/L		149	70 - 130	16	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	150	*+	ng/L		150	70 - 130	9	30
PFECHS	92.4	84.5		ng/L		91	70 - 130	9	30
PFPPrS	92.0	102		ng/L		110	70 - 130	6	30
6:2 FTUCA	100	97.2		ng/L		97	70 - 130	5	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	89.2	104		ng/L		117	70 - 130	1	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	94.7		ng/L		95	70 - 130	14	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	101		ng/L		101	70 - 130	14	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	98.2		ng/L		98	70 - 130	2	30

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QC Sample Results

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

Job ID: 320-104757-1

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

<i>Isotope Dilution</i>	<i>LCS D</i>	<i>LCS D</i>	<i>Limits</i>
<i>%Recovery</i>	<i>Qualifier</i>		
13C8 FOSA	63		25 - 150
13C4 PFBA	73		25 - 150
13C5 PFPeA	78		25 - 150
13C2 PFHxA	72		25 - 150
13C4 PFHpA	75		25 - 150
13C4 PFOA	76		25 - 150
13C5 PFNA	73		25 - 150
13C2 PFDA	76		25 - 150
13C2 PFUnA	73		25 - 150
13C2 PFDoA	72		25 - 150
13C2 PFTeDA	71		25 - 150
13C2 PFHxDA	56		25 - 150
13C3 PFBS	64		25 - 150
18O2 PFHxS	70		25 - 150
13C4 PFOS	64		25 - 150
d5-NEtFOSAA	62		25 - 150
d3-NMeFOSAA	60		25 - 150
M2-4:2 FTS	69		25 - 150
M2-6:2 FTS	69		25 - 150
M2-8:2 FTS	74		25 - 150
d-N-MeFOSA-M	53		25 - 150
d-N-EtFOSA-M	55		25 - 150
d7-N-MeFOSE-M	58		25 - 150
d9-N-EtFOSE-M	63		25 - 150
13C3 HFPO-DA	73		25 - 150
13C-6:2 FTCA	47		25 - 150
13C-8:2 FTCA	47		25 - 150
13C2 10:2 FTS	79		25 - 150
13C-6:2 FTUCA	86		25 - 150

Lab Sample ID: MB 320-707542/1-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 707542

<i>Analyte</i>	<i>MB</i>	<i>MB</i>	<i>RL</i>	<i>MDL</i>	<i>Unit</i>	<i>D</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
	<i>Result</i>	<i>Qualifier</i>							
Perfluorohexanoic acid (PFHxA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluoroheptanoic acid (PFHpA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorooctanoic acid (PFOA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorononanoic acid (PFNA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorodecanoic acid (PFDA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluoroundecanoic acid (PFUnA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorododecanoic acid (PFDoA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorotridecanoic acid (PFTeDA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluoropentanesulfonic acid (PFPeS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorooctanesulfonic acid (PFOS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorononanesulfonic acid (PFNS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: MB 320-707542/1-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 707542

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorododecanesulfonic acid (PFDoS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluorooctanesulfonamide (FOSA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
6:2 FTUCA	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		1.0		ug/Kg		09/19/23 21:50	09/23/23 07:32	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	131		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C4 PFBA	35		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C5 PFPeA	112		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C2 PFHxA	103		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C4 PFHpA	119		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C4 PFOA	107		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C5 PFNA	102		25 - 150	09/19/23 21:50	09/23/23 07:32	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: MB 320-707542/1-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 707542

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C2 PFDA	113		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C2 PFUnA	116		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C2 PFDoA	111		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C2 PFTeDA	116		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C2 PFHxDA	104		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C3 PFBS	118		25 - 150	09/19/23 21:50	09/23/23 07:32	1
18O2 PFHxS	119		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C4 PFOS	111		25 - 150	09/19/23 21:50	09/23/23 07:32	1
d5-NEtFOSAA	132		25 - 150	09/19/23 21:50	09/23/23 07:32	1
d3-NMeFOSAA	124		25 - 150	09/19/23 21:50	09/23/23 07:32	1
M2-4:2 FTS	0		0 - 10	09/19/23 21:50	09/23/23 07:32	1
M2-6:2 FTS	99		25 - 150	09/19/23 21:50	09/23/23 07:32	1
M2-8:2 FTS	104		25 - 150	09/19/23 21:50	09/23/23 07:32	1
d-N-MeFOSA-M	115		25 - 150	09/19/23 21:50	09/23/23 07:32	1
d-N-EtFOSA-M	124		25 - 150	09/19/23 21:50	09/23/23 07:32	1
d7-N-MeFOSE-M	107		25 - 150	09/19/23 21:50	09/23/23 07:32	1
d9-N-EtFOSE-M	103		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C3 HFPO-DA	94		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C-6:2 FTCA	103		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C-8:2 FTCA	127		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C2 10:2 FTS	119		25 - 150	09/19/23 21:50	09/23/23 07:32	1
13C-6:2 FTUCA	132		25 - 150	09/19/23 21:50	09/23/23 07:32	1

Lab Sample ID: LCS 320-707542/2-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 707542

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Perfluorohexanoic acid (PFHxA)	10.0	18.9	*+	ug/Kg		189	92 - 152
Perfluoroheptanoic acid (PFHpA)	10.0	18.8	*+	ug/Kg		188	100 - 160
Perfluorooctanoic acid (PFOA)	10.0	33.5		ug/Kg		335	169 - 414
Perfluorononanoic acid (PFNA)	10.0	15.9	*+	ug/Kg		159	82 - 142
Perfluorodecanoic acid (PFDA)	10.0	16.3	*+	ug/Kg		163	81 - 141
Perfluoroundecanoic acid (PFUnA)	10.0	11.8		ug/Kg		118	70 - 130
Perfluorododecanoic acid (PFDoA)	10.0	11.3		ug/Kg		113	63 - 123
Perfluorotridecanoic acid (PFTTrDA)	10.0	9.59		ug/Kg		96	63 - 123
Perfluorotetradecanoic acid (PFTeA)	10.0	9.30		ug/Kg		93	55 - 115
Perfluoro-n-hexadecanoic acid (PFHxDA)	10.0	6.27		ug/Kg		63	42 - 102
Perfluoro-n-octadecanoic acid (PFODA)	10.0	5.55		ug/Kg		56	36 - 96
Perfluorobutanesulfonic acid (PFBS)	8.88	8.50		ug/Kg		96	74 - 134
Perfluoropentanesulfonic acid (PFPeS)	9.40	9.84		ug/Kg		105	68 - 134
Perfluorohexanesulfonic acid (PFHxS)	9.12	9.67		ug/Kg		106	61 - 121

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-707542/2-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 707542

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroheptanesulfonic acid (PFHpS)	9.54	10.3		ug/Kg		108	68 - 128
Perfluorooctanesulfonic acid (PFOS)	9.30	10.4		ug/Kg		111	70 - 138
Perfluorononanesulfonic acid (PFNS)	9.62	11.2		ug/Kg		116	66 - 126
Perfluorodecanesulfonic acid (PFDS)	9.64	10.8		ug/Kg		112	66 - 126
Perfluorododecanesulfonic acid (PFDoS)	9.70	11.6		ug/Kg		120	70 - 130
Perfluorooctanesulfonamide (FOSA)	10.0	ND		ug/Kg		0	0 - 10
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0	ND		ug/Kg		0	0 - 10
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0	ND		ug/Kg		0	0 - 10
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	9.38	ND		ug/Kg		0	0 - 10
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	9.52	ND		ug/Kg		0	0 - 10
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.60	ND		ug/Kg		0	0 - 10
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	9.66	ND		ug/Kg		0	0 - 10
N-ethylperfluorooctane sulfonamide (NEtFOSA)	10.0	ND		ug/Kg		0	0 - 10
N-methylperfluorooctane sulfonamide (NMeFOSA)	10.0	ND		ug/Kg		0	0 - 10
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	10.0	ND		ug/Kg		0	0 - 10
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	10.0	ND		ug/Kg		0	0 - 10
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	9.34	9.10		ug/Kg		97	74 - 134
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	10.0	8.34		ug/Kg		83	53 - 158
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.46	ND		ug/Kg		0	0 - 10
3-Perfluoropropylpropanoic acid (3:3 FTCA)	10.0	ND		ug/Kg		0	0 - 10
3-Perfluoropentylpropanoic acid (5:3 FTCA)	10.0	ND		ug/Kg		0	0 - 10
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	10.0	ND		ug/Kg		0	0 - 10
PFECHS	9.24	10.1		ug/Kg		109	50 - 150
PFPrS	9.20	8.15		ug/Kg		89	50 - 150
6:2 FTUCA	10.0	ND		ug/Kg		0	0 - 10
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	8.92	9.80		ug/Kg		110	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	10.0	11.1		ug/Kg		111	50 - 150

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-707542/2-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 707542

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-4-methoxybutanoic acid (PFMBA)	10.0	7.17		ug/Kg		72	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.0	7.64		ug/Kg		76	50 - 150

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 FOSA	134		25 - 150
13C4 PFBA	92		25 - 150
13C5 PFPeA	115		25 - 150
13C2 PFHxA	112		25 - 150
13C4 PFHpA	110		25 - 150
13C4 PFOA	108		25 - 150
13C5 PFNA	108		25 - 150
13C2 PFDA	110		25 - 150
13C2 PFUnA	108		25 - 150
13C2 PFDoA	109		25 - 150
13C2 PFTeDA	106		25 - 150
13C2 PFHxDA	108		25 - 150
13C3 PFBS	119		25 - 150
18O2 PFHxS	115		25 - 150
13C4 PFOS	110		25 - 150
d5-NEtFOSAA	114		25 - 150
d3-NMeFOSAA	114		25 - 150
M2-4:2 FTS	0		0 - 10
M2-6:2 FTS	109		25 - 150
M2-8:2 FTS	101		25 - 150
d-N-MeFOSA-M	120		25 - 150
d-N-EtFOSA-M	108		25 - 150
d7-N-MeFOSE-M	108		25 - 150
d9-N-EtFOSE-M	106		25 - 150
13C3 HFPO-DA	93		25 - 150
13C-6:2 FTCA	106		25 - 150
13C-8:2 FTCA	116		25 - 150
13C2 10:2 FTS	120		25 - 150
13C-6:2 FTUCA	138		25 - 150

Lab Sample ID: LCSD 320-707542/3-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 707542

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	10.0	18.3	*+	ug/Kg		183	92 - 152	3	30
Perfluoroheptanoic acid (PFHpA)	10.0	18.1	*+	ug/Kg		181	100 - 160	4	30
Perfluorooctanoic acid (PFOA)	10.0	31.1		ug/Kg		311	169 - 414	8	30
Perfluorononanoic acid (PFNA)	10.0	15.5	*+	ug/Kg		155	82 - 142	2	30
Perfluorodecanoic acid (PFDA)	10.0	13.2		ug/Kg		132	81 - 141	21	30
Perfluoroundecanoic acid (PFUnA)	10.0	10.3		ug/Kg		103	70 - 130	13	30
Perfluorododecanoic acid (PFDoA)	10.0	10.7		ug/Kg		107	63 - 123	5	30

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCSD 320-707542/3-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 707542

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTTrDA)	10.0	10.2		ug/Kg		102	63 - 123	6	30
Perfluorotetradecanoic acid (PFTTeA)	10.0	7.71		ug/Kg		77	55 - 115	19	30
Perfluoro-n-hexadecanoic acid (PFHxDA)	10.0	5.87		ug/Kg		59	42 - 102	7	30
Perfluoro-n-octadecanoic acid (PFODA)	10.0	5.27		ug/Kg		53	36 - 96	5	30
Perfluorobutanesulfonic acid (PFBS)	8.88	8.54		ug/Kg		96	74 - 134	0	30
Perfluoropentanesulfonic acid (PFPeS)	9.40	9.57		ug/Kg		102	68 - 134	3	30
Perfluorohexanesulfonic acid (PFHxS)	9.12	9.67		ug/Kg		106	61 - 121	0	30
Perfluoroheptanesulfonic acid (PFHpS)	9.54	9.61		ug/Kg		101	68 - 128	7	30
Perfluorooctanesulfonic acid (PFOS)	9.30	9.46		ug/Kg		102	70 - 138	9	30
Perfluorononanesulfonic acid (PFNS)	9.62	10.3		ug/Kg		107	66 - 126	9	30
Perfluorodecanesulfonic acid (PFDS)	9.64	10.2		ug/Kg		106	66 - 126	6	30
Perfluorododecanesulfonic acid (PFDoS)	9.70	10.3		ug/Kg		106	70 - 130	12	30
Perfluorooctanesulfonamide (FOSA)	10.0	ND		ug/Kg		0	0 - 10	NC	30
N-Methyl perfluorooctanesulfonamide (NMeFOSA)	10.0	ND		ug/Kg		0	0 - 10	NC	30
N-Ethyl perfluorooctanesulfonamide (NEtFOSA)	10.0	ND		ug/Kg		0	0 - 10	NC	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	9.38	ND		ug/Kg		0	0 - 10	NC	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	9.52	ND		ug/Kg		0	0 - 10	NC	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	9.60	ND		ug/Kg		0	0 - 10	NC	30
1H,1H,2H,2H-Perfluorododecane sulfonic acid (10:2 FTS)	9.66	ND		ug/Kg		0	0 - 10	NC	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	10.0	ND		ug/Kg		0	0 - 10	NC	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	10.0	ND		ug/Kg		0	0 - 10	NC	30
N-methylperfluorooctane sulfonamide ethanol (NMeFOSE)	10.0	ND		ug/Kg		0	0 - 10	NC	30
N-ethylperfluorooctane sulfonamide ethanol (NEtFOSE)	10.0	ND		ug/Kg		0	0 - 10	NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	9.34	8.71		ug/Kg		93	74 - 134	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	10.0	7.62		ug/Kg		76	53 - 158	9	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.46	ND		ug/Kg		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: 320-104757-1

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

Lab Sample ID: LCSD 320-707542/3-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 707542

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
3-Perfluoropropylpropanoic acid (3:3 FTCA)	10.0	ND		ug/Kg		0	0 - 10	NC	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	10.0	ND		ug/Kg		0	0 - 10	NC	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	10.0	ND		ug/Kg		0	0 - 10	NC	30
PFECHS	9.24	10.4		ug/Kg		113	50 - 150	3	30
PFPPrS	9.20	10.0		ug/Kg		109	50 - 150	20	30
6:2 FTUCA	10.0	ND		ug/Kg		0	0 - 10	NC	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	8.92	9.63		ug/Kg		108	50 - 150	2	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	10.0	10.6		ug/Kg		106	50 - 150	5	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	10.0	6.79		ug/Kg		68	50 - 150	5	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.0	7.80		ug/Kg		78	50 - 150	2	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	129		25 - 150
13C4 PFBA	100		25 - 150
13C5 PFPeA	114		25 - 150
13C2 PFHxA	109		25 - 150
13C4 PFHpA	114		25 - 150
13C4 PFOA	104		25 - 150
13C5 PFNA	105		25 - 150
13C2 PFDA	114		25 - 150
13C2 PFUnA	111		25 - 150
13C2 PFDoA	109		25 - 150
13C2 PFTeDA	127		25 - 150
13C2 PFHxDA	104		25 - 150
13C3 PFBS	119		25 - 150
18O2 PFHxS	113		25 - 150
13C4 PFOS	114		25 - 150
d5-NEtFOSAA	131		25 - 150
d3-NMeFOSAA	119		25 - 150
M2-4:2 FTS	0		0 - 10
M2-6:2 FTS	101		25 - 150
M2-8:2 FTS	96		25 - 150
d-N-MeFOSA-M	108		25 - 150
d-N-EtFOSA-M	110		25 - 150
d7-N-MeFOSE-M	110		25 - 150
d9-N-EtFOSE-M	113		25 - 150
13C3 HFPO-DA	100		25 - 150
13C-6:2 FTCA	113		25 - 150
13C-8:2 FTCA	116		25 - 150
13C2 10:2 FTS	116		25 - 150
13C-6:2 FTUCA	136		25 - 150

QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: MB 320-707730/1-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 707730

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		09/20/23 12:55	09/23/23 05:51	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 05:51	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 05:51	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		09/20/23 12:55	09/23/23 05:51	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C5 PFPeA	116		25 - 150	09/20/23 12:55	09/23/23 05:51	1
13C2 PFHxA	111		25 - 150	09/20/23 12:55	09/23/23 05:51	1
M2-4:2 FTS	0		0 - 10	09/20/23 12:55	09/23/23 05:51	1
13C3 HFPO-DA	98		25 - 150	09/20/23 12:55	09/23/23 05:51	1

Lab Sample ID: LCS 320-707730/2-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 707730

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	132	*+	ng/L		132	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	89.4		ng/L		89	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	96.9		ng/L		97	70 - 130

Isotope Dilution	LCS	LCS	Limits
	%Recovery	Qualifier	
13C5 PFPeA	118		25 - 150
13C2 PFHxA	109		25 - 150
M2-4:2 FTS	0		0 - 10
13C3 HFPO-DA	99		25 - 150

Lab Sample ID: LCSD 320-707730/3-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 707730

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	135	*+	ng/L		135	70 - 130	2	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	103		ng/L		103	70 - 130	14	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	92.4		ng/L		92	70 - 130	5	30

Isotope Dilution	LCSD	LCSD	Limits
	%Recovery	Qualifier	
13C5 PFPeA	97		25 - 150
13C2 PFHxA	109		25 - 150

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCSD 320-707730/3-A
Matrix: Solid
Analysis Batch: 708499

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 707730

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
M2-4:2 FTS	0		0 - 10
13C3 HFPO-DA	91		25 - 150

Lab Sample ID: MB 320-710936/1-A
Matrix: Solid
Analysis Batch: 713698

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 710936

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	ND		1.0		ug/Kg		09/19/23 21:50	10/17/23 10:57	1
Perfluoropentanoic acid (PFPeA)	ND		1.0		ug/Kg		09/19/23 21:50	10/17/23 10:57	1
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		1.0		ug/Kg		09/19/23 21:50	10/17/23 10:57	1

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	60		25 - 150	09/19/23 21:50	10/17/23 10:57	1
13C5 PFPeA	95		25 - 150	09/19/23 21:50	10/17/23 10:57	1

Lab Sample ID: LCS 320-710936/2-A
Matrix: Solid
Analysis Batch: 713698

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 710936

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Perfluorobutanoic acid (PFBA)	10.0	15.5		ug/Kg		155	96 - 183
Perfluoropentanoic acid (PFPeA)	10.0	15.2	*+	ug/Kg		152	81 - 141
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	9.44	6.58		ug/Kg		70	66 - 136

Isotope Dilution	LCS LCS		Limits
	%Recovery	Qualifier	
13C4 PFBA	96		25 - 150
13C5 PFPeA	104		25 - 150

Lab Sample ID: LCSD 320-710936/3-A
Matrix: Solid
Analysis Batch: 713698

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 710936

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec Limits	RPD	
		Result	Qualifier					RPD	Limit
Perfluorobutanoic acid (PFBA)	10.0	14.8		ug/Kg		148	96 - 183	4	30
Perfluoropentanoic acid (PFPeA)	10.0	14.5	*+	ug/Kg		145	81 - 141	5	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	9.44	6.45		ug/Kg		68	66 - 136	2	30

Isotope Dilution	LCSD LCSD		Limits
	%Recovery	Qualifier	
13C4 PFBA	55		25 - 150
13C5 PFPeA	102		25 - 150

QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LB 320-716086/4-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	LB	LB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		10/26/23 20:32	11/01/23 00:16	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		10/26/23 20:32	11/01/23 00:16	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		10/26/23 20:32	11/01/23 00:16	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		10/26/23 20:32	11/01/23 00:16	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LB 320-716086/4-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
6:2 FTUCA	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		10/26/23 20:32	11/01/23 00:16	1

Isotope Dilution	LB %Recovery	LB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	66		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C4 PFBA	53		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C5 PFPeA	74		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C2 PFHxA	78		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C4 PFHpA	76		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C4 PFOA	75		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C5 PFNA	73		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C2 PFDA	71		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C2 PFUnA	65		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C2 PFDoA	62		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C2 PFTeDA	65		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C2 PFHxDA	52		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C3 PFBS	68		25 - 150	10/26/23 20:32	11/01/23 00:16	1
18O2 PFHxS	70		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C4 PFOS	59		25 - 150	10/26/23 20:32	11/01/23 00:16	1
d5-NEtFOSAA	62		25 - 150	10/26/23 20:32	11/01/23 00:16	1
d3-NMeFOSAA	58		25 - 150	10/26/23 20:32	11/01/23 00:16	1
M2-4:2 FTS	0		0 - 10	10/26/23 20:32	11/01/23 00:16	1
M2-6:2 FTS	66		25 - 150	10/26/23 20:32	11/01/23 00:16	1
M2-8:2 FTS	70		25 - 150	10/26/23 20:32	11/01/23 00:16	1
d-N-MeFOSA-M	58		25 - 150	10/26/23 20:32	11/01/23 00:16	1
d-N-EtFOSA-M	55		25 - 150	10/26/23 20:32	11/01/23 00:16	1
d7-N-MeFOSE-M	50		25 - 150	10/26/23 20:32	11/01/23 00:16	1
d9-N-EtFOSE-M	44		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C3 HFPO-DA	66		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C-6:2 FTCA	49		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C-8:2 FTCA	43		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C2 10:2 FTS	65		25 - 150	10/26/23 20:32	11/01/23 00:16	1
13C-6:2 FTUCA	88		25 - 150	10/26/23 20:32	11/01/23 00:16	1

Lab Sample ID: MB 320-716086/1-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: MB 320-716086/1-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		10/26/23 20:32	10/31/23 23:43	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		10/26/23 20:32	10/31/23 23:43	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		10/26/23 20:32	10/31/23 23:43	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		10/26/23 20:32	10/31/23 23:43	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
6:2 FTUCA	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		10/26/23 20:32	10/31/23 23:43	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
¹³ C8 FOSA	66		25 - 150	10/26/23 20:32	10/31/23 23:43	1

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: MB 320-716086/1-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Method Blank
Prep Type: Post-Treatment
Prep Batch: 716086

Isotope Dilution	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C4 PFBA	54		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C5 PFPeA	74		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C2 PFHxA	75		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C4 PFHpA	77		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C4 PFOA	76		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C5 PFNA	76		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C2 PFDA	82		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C2 PFUnA	77		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C2 PFDaA	75		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C2 PFTeDA	71		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C2 PFHxDA	61		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C3 PFBS	68		25 - 150	10/26/23 20:32	10/31/23 23:43	1
18O2 PFHxS	69		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C4 PFOS	66		25 - 150	10/26/23 20:32	10/31/23 23:43	1
d5-NEtFOSAA	69		25 - 150	10/26/23 20:32	10/31/23 23:43	1
d3-NMeFOSAA	64		25 - 150	10/26/23 20:32	10/31/23 23:43	1
M2-4:2 FTS	0		0 - 10	10/26/23 20:32	10/31/23 23:43	1
M2-6:2 FTS	72		25 - 150	10/26/23 20:32	10/31/23 23:43	1
M2-8:2 FTS	73		25 - 150	10/26/23 20:32	10/31/23 23:43	1
d-N-MeFOSA-M	56		25 - 150	10/26/23 20:32	10/31/23 23:43	1
d-N-EtFOSA-M	55		25 - 150	10/26/23 20:32	10/31/23 23:43	1
d7-N-MeFOSE-M	56		25 - 150	10/26/23 20:32	10/31/23 23:43	1
d9-N-EtFOSE-M	52		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C3 HFPO-DA	60		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C-6:2 FTCA	50		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C-8:2 FTCA	48		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C2 10:2 FTS	70		25 - 150	10/26/23 20:32	10/31/23 23:43	1
13C-6:2 FTUCA	90		25 - 150	10/26/23 20:32	10/31/23 23:43	1

Lab Sample ID: LCS 320-716086/2-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Perfluorobutanoic acid (PFBA)	100	130		ng/L		130	93 - 153
Perfluoropentanoic acid (PFPeA)	100	140		ng/L		140	85 - 145
Perfluorohexanoic acid (PFHxA)	100	161	*+	ng/L		161	81 - 141
Perfluoroheptanoic acid (PFHpA)	100	154		ng/L		154	104 - 171
Perfluorooctanoic acid (PFOA)	100	210		ng/L		210	158 - 454
Perfluorononanoic acid (PFNA)	100	113		ng/L		113	66 - 126
Perfluorodecanoic acid (PFDA)	100	132	*+	ng/L		132	65 - 125
Perfluoroundecanoic acid (PFUnA)	100	90.5		ng/L		90	57 - 117
Perfluorododecanoic acid (PFDaA)	100	94.8		ng/L		95	66 - 126
Perfluorotridecanoic acid (PFTTrDA)	100	80.0		ng/L		80	65 - 136
Perfluorotetradecanoic acid (PFTeA)	100	66.9		ng/L		67	63 - 123

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-716086/2-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	57.6		ng/L		58	47 - 107
Perfluoro-n-octadecanoic acid (PFODA)	100	38.9		ng/L		39	30 - 97
Perfluorobutanesulfonic acid (PFBS)	88.8	111		ng/L		125	75 - 135
Perfluoropentanesulfonic acid (PFPeS)	94.0	110		ng/L		117	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	91.2	100		ng/L		110	64 - 124
Perfluoroheptanesulfonic acid (PFHpS)	95.4	114		ng/L		119	70 - 131
Perfluorooctanesulfonic acid (PFOS)	93.0	112		ng/L		121	68 - 128
Perfluorononanesulfonic acid (PFNS)	96.2	105		ng/L		109	70 - 130
Perfluorodecanesulfonic acid (PFDS)	96.4	97.0		ng/L		101	66 - 126
Perfluorododecanesulfonic acid (PFDoS)	97.0	75.6		ng/L		78	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
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	108		ng/L		115	75 - 135
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	76.5		ng/L		81	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

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCS 320-716086/2-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	ND		ng/L		0	0 - 10
PFECBS	92.4	93.4		ng/L		101	70 - 130
PFPrS	92.0	114		ng/L		124	70 - 130
6:2 FTUCA	100	ND		ng/L		0	0 - 10
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	107		ng/L		120	70 - 130

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 FOSA	61		25 - 150
13C4 PFBA	66		25 - 150
13C5 PFPeA	81		25 - 150
13C2 PFHxA	79		25 - 150
13C4 PFHpA	79		25 - 150
13C4 PFOA	77		25 - 150
13C5 PFNA	82		25 - 150
13C2 PFDA	79		25 - 150
13C2 PFUnA	79		25 - 150
13C2 PFDoA	70		25 - 150
13C2 PFTeDA	69		25 - 150
13C2 PFHxDA	60		25 - 150
13C3 PFBS	68		25 - 150
18O2 PFHxS	73		25 - 150
13C4 PFOS	66		25 - 150
d5-NEtFOSAA	63		25 - 150
d3-NMeFOSAA	66		25 - 150
M2-4:2 FTS	0		0 - 10
M2-6:2 FTS	78		25 - 150
M2-8:2 FTS	70		25 - 150
d-N-MeFOSA-M	44		25 - 150
d-N-EtFOSA-M	43		25 - 150
d7-N-MeFOSE-M	59		25 - 150
d9-N-EtFOSE-M	56		25 - 150
13C3 HFPO-DA	69		25 - 150
13C-6:2 FTCA	49		25 - 150
13C-8:2 FTCA	48		25 - 150
13C2 10:2 FTS	68		25 - 150
13C-6:2 FTUCA	94		25 - 150

Lab Sample ID: LCSD 320-716086/3-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	100	144		ng/L		144	93 - 153	10	30
Perfluoropentanoic acid (PFPeA)	100	141		ng/L		141	85 - 145	1	30
Perfluorohexanoic acid (PFHxA)	100	173	*+	ng/L		173	81 - 141	7	30
Perfluoroheptanoic acid (PFHpA)	100	188	*+	ng/L		188	104 - 171	20	30
Perfluorooctanoic acid (PFOA)	100	272		ng/L		272	158 - 454	26	30

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCSD 320-716086/3-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	RPD Limit
							Limits	RPD		
Perfluorononanoic acid (PFNA)	100	153	*+	ng/L		153	66 - 126	30	30	
Perfluorodecanoic acid (PFDA)	100	141	*+	ng/L		141	65 - 125	7	30	
Perfluoroundecanoic acid (PFUnA)	100	101		ng/L		101	57 - 117	11	30	
Perfluorododecanoic acid (PFDoA)	100	95.0		ng/L		95	66 - 126	0	30	
Perfluorotridecanoic acid (PFTrDA)	100	89.9		ng/L		90	65 - 136	12	30	
Perfluorotetradecanoic acid (PFTeA)	100	70.9		ng/L		71	63 - 123	6	30	
Perfluoro-n-hexadecanoic acid (PFHxDA)	100	60.5		ng/L		60	47 - 107	5	30	
Perfluoro-n-octadecanoic acid (PFODA)	100	48.0		ng/L		48	30 - 97	21	30	
Perfluorobutanesulfonic acid (PFBS)	88.8	96.5		ng/L		109	75 - 135	14	30	
Perfluoropentanesulfonic acid (PFPeS)	94.0	99.8		ng/L		106	70 - 130	10	30	
Perfluorohexanesulfonic acid (PFHxS)	91.2	90.5		ng/L		99	64 - 124	10	30	
Perfluoroheptanesulfonic acid (PFHpS)	95.4	109		ng/L		114	70 - 131	4	30	
Perfluorooctanesulfonic acid (PFOS)	93.0	102		ng/L		110	68 - 128	9	30	
Perfluorononanesulfonic acid (PFNS)	96.2	102		ng/L		106	70 - 130	3	30	
Perfluorodecanesulfonic acid (PFDS)	96.4	99.4		ng/L		103	66 - 126	2	30	
Perfluorododecanesulfonic acid (PFDoS)	97.0	90.2		ng/L		93	67 - 127	18	30	
Perfluorooctanesulfonamide (FOSA)	100	ND		ng/L		0	0 - 10	NC	30	
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	

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QC Sample Results

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

Job ID: 320-104757-1

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

Lab Sample ID: LCSD 320-716086/3-A
Matrix: Solid
Analysis Batch: 716979

Client Sample ID: Lab Control Sample Dup
Prep Type: Post-Treatment
Prep Batch: 716086

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid (9Cl-PF3ONS)	93.4	102		ng/L		110	75 - 135	5	30
11-Chloroeicosafluoro-3-oxaund ecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	75.1		ng/L		80	54 - 114	2	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	84.8		ng/L		92	70 - 130	10	30
PFPPrS	92.0	104		ng/L		113	70 - 130	9	30
6:2 FTUCA	100	ND		ng/L		0	0 - 10	NC	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	97.1		ng/L		109	70 - 130	10	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C8 FOSA	70		25 - 150
13C4 PFBA	31		25 - 150
13C5 PFPeA	80		25 - 150
13C2 PFHxA	80		25 - 150
13C4 PFHpA	79		25 - 150
13C4 PFOA	81		25 - 150
13C5 PFNA	78		25 - 150
13C2 PFDA	81		25 - 150
13C2 PFUnA	81		25 - 150
13C2 PFDoA	80		25 - 150
13C2 PFTeDA	72		25 - 150
13C2 PFHxDA	61		25 - 150
13C3 PFBS	73		25 - 150
18O2 PFHxS	76		25 - 150
13C4 PFOS	68		25 - 150
d5-NEtFOSAA	76		25 - 150
d3-NMeFOSAA	66		25 - 150
M2-4:2 FTS	0		0 - 10
M2-6:2 FTS	76		25 - 150
M2-8:2 FTS	73		25 - 150
d-N-MeFOSA-M	65		25 - 150
d-N-EtFOSA-M	57		25 - 150
d7-N-MeFOSE-M	60		25 - 150
d9-N-EtFOSE-M	56		25 - 150
13C3 HFPO-DA	69		25 - 150
13C-6:2 FTCA	50		25 - 150
13C-8:2 FTCA	50		25 - 150
13C2 10:2 FTS	81		25 - 150
13C-6:2 FTUCA	94		25 - 150

QC Sample Results

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

Job ID: 320-104757-1

Method: CIC EOF - Extractable Organic Fluorine by Combustion Ion Chromatography

Lab Sample ID: MB 320-718918/1-A
Matrix: Solid
Analysis Batch: 719404

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 718918

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Extractable Organic Fluorine (EOF)	ND		500		ng/g		11/08/23 13:11	11/10/23 01:51	1

Lab Sample ID: LCS 320-718918/2-A
Matrix: Solid
Analysis Batch: 719404

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 718918

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Extractable Organic Fluorine (EOF)	5070	5640		ng/g		111	50 - 150

Lab Sample ID: LCSD 320-718918/3-A
Matrix: Solid
Analysis Batch: 719404

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 718918

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Extractable Organic Fluorine (EOF)	5070	5780		ng/g		114	50 - 150	2	20

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 Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
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
Adsorbable Organic Fluorine (AOF)	50.7	45.0		ug/L		89	50 - 150

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	Limit
Adsorbable Organic Fluorine (AOF)	50.7	45.8		ug/L		90	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

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QC Sample Results

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

Job ID: 320-104757-1

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

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: 320-104757-1

LCMS

Prep Batch: 426127

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-7	SPLP lab blank	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
320-104757-7	SPLP lab blank	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: 429043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-6	KFTA-DU5A SPLP LEACHATE	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
320-104757-6	KFTA-DU5A SPLP LEACHATE	Total/NA	Water	ELLE SOP	429043
MB 410-429043/1-A	Method Blank	Total/NA	Water	ELLE SOP	429043
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

Leach Batch: 706527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - IN3	KFTA-DU5A	SPLP West	Solid	1312	
320-104757-1 - RE3	KFTA-DU5A	SPLP West	Solid	1312	
320-104757-1 - IN2	KFTA-DU5A	SPLP West	Solid	1312	
320-104757-2 - RE3	KFTA-DU5A DUPLICATE	SPLP West	Solid	1312	
320-104757-2 - IN2	KFTA-DU5A DUPLICATE	SPLP West	Solid	1312	
320-104757-2 - IN3	KFTA-DU5A DUPLICATE	SPLP West	Solid	1312	
320-104757-3 - IN3	KFTA-DU5A TRIPLICATE	SPLP West	Solid	1312	
320-104757-3 - IN2	KFTA-DU5A TRIPLICATE	SPLP West	Solid	1312	
320-104757-3 - RE3	KFTA-DU5A TRIPLICATE	SPLP West	Solid	1312	

Prep Batch: 707542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1	KFTA-DU5A	Post-Treatment	Solid	TOP Post-Prep	
320-104757-1 - DL	KFTA-DU5A	Post-Treatment	Solid	TOP Post-Prep	
320-104757-2 - DL	KFTA-DU5A DUPLICATE	Post-Treatment	Solid	TOP Post-Prep	
320-104757-2	KFTA-DU5A DUPLICATE	Post-Treatment	Solid	TOP Post-Prep	
320-104757-3	KFTA-DU5A TRIPLICATE	Post-Treatment	Solid	TOP Post-Prep	
320-104757-3 - DL	KFTA-DU5A TRIPLICATE	Post-Treatment	Solid	TOP Post-Prep	
320-104757-4	KFTA-DU5B	Post-Treatment	Solid	TOP Post-Prep	
320-104757-4 - DL	KFTA-DU5B	Post-Treatment	Solid	TOP Post-Prep	
320-104757-5	KFTA-DU5C	Post-Treatment	Solid	TOP Post-Prep	
320-104757-5 - DL	KFTA-DU5C	Post-Treatment	Solid	TOP Post-Prep	
MB 320-707542/1-A	Method Blank	Post-Treatment	Solid	TOP Post-Prep	

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QC Association Summary

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

Job ID: 320-104757-1

LCMS (Continued)

Prep Batch: 707542 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-707542/2-A	Lab Control Sample	Post-Treatment	Solid	TOP Post-Prep	
LCSD 320-707542/3-A	Lab Control Sample Dup	Post-Treatment	Solid	TOP Post-Prep	

Prep Batch: 707544

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - DL	KFTA-DU5A	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-1	KFTA-DU5A	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-2	KFTA-DU5A DUPLICATE	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-2 - DL	KFTA-DU5A DUPLICATE	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-3	KFTA-DU5A TRIPLICATE	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-3 - DL	KFTA-DU5A TRIPLICATE	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-4	KFTA-DU5B	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-4 - DL	KFTA-DU5B	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-5	KFTA-DU5C	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-5 - DL	KFTA-DU5C	Pre-Treatment	Solid	TOP Pre-Prep	
MB 320-707544/1-A	Method Blank	Pre-Treatment	Solid	TOP Pre-Prep	
LCS 320-707544/2-A	Lab Control Sample	Pre-Treatment	Solid	TOP Pre-Prep	
LCSD 320-707544/3-A	Lab Control Sample Dup	Pre-Treatment	Solid	TOP Pre-Prep	

Prep Batch: 707730

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - IN2	KFTA-DU5A	SPLP West	Solid	TOP Post Prep	706527
320-104757-2 - IN2	KFTA-DU5A DUPLICATE	SPLP West	Solid	TOP Post Prep	706527
320-104757-3 - IN2	KFTA-DU5A TRIPLICATE	SPLP West	Solid	TOP Post Prep	706527
MB 320-707730/1-A	Method Blank	Post-Treatment	Solid	TOP Post Prep	
LCS 320-707730/2-A	Lab Control Sample	Post-Treatment	Solid	TOP Post Prep	
LCSD 320-707730/3-A	Lab Control Sample Dup	Post-Treatment	Solid	TOP Post Prep	

Analysis Batch: 708499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1	KFTA-DU5A	Post-Treatment	Solid	537 (modified)	707542
320-104757-1	KFTA-DU5A	Pre-Treatment	Solid	537 (modified)	707544
320-104757-1 - IN2	KFTA-DU5A	SPLP West	Solid	537 (modified)	707730
320-104757-2	KFTA-DU5A DUPLICATE	Post-Treatment	Solid	537 (modified)	707542
320-104757-2	KFTA-DU5A DUPLICATE	Pre-Treatment	Solid	537 (modified)	707544
320-104757-2 - IN2	KFTA-DU5A DUPLICATE	SPLP West	Solid	537 (modified)	707730
320-104757-3	KFTA-DU5A TRIPLICATE	Post-Treatment	Solid	537 (modified)	707542
320-104757-3	KFTA-DU5A TRIPLICATE	Pre-Treatment	Solid	537 (modified)	707544
320-104757-3 - IN2	KFTA-DU5A TRIPLICATE	SPLP West	Solid	537 (modified)	707730
320-104757-4	KFTA-DU5B	Post-Treatment	Solid	537 (modified)	707542
320-104757-4	KFTA-DU5B	Pre-Treatment	Solid	537 (modified)	707544
320-104757-5	KFTA-DU5C	Post-Treatment	Solid	537 (modified)	707542
320-104757-5	KFTA-DU5C	Pre-Treatment	Solid	537 (modified)	707544
MB 320-707542/1-A	Method Blank	Post-Treatment	Solid	537 (modified)	707542
MB 320-707544/1-A	Method Blank	Pre-Treatment	Solid	537 (modified)	707544
MB 320-707730/1-A	Method Blank	Post-Treatment	Solid	537 (modified)	707730
LCS 320-707542/2-A	Lab Control Sample	Post-Treatment	Solid	537 (modified)	707542
LCS 320-707544/2-A	Lab Control Sample	Pre-Treatment	Solid	537 (modified)	707544
LCS 320-707730/2-A	Lab Control Sample	Post-Treatment	Solid	537 (modified)	707730
LCSD 320-707542/3-A	Lab Control Sample Dup	Post-Treatment	Solid	537 (modified)	707542
LCSD 320-707544/3-A	Lab Control Sample Dup	Pre-Treatment	Solid	537 (modified)	707544

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QC Association Summary

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

Job ID: 320-104757-1

LCMS (Continued)

Analysis Batch: 708499 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 320-707730/3-A	Lab Control Sample Dup	Post-Treatment	Solid	537 (modified)	707730

Analysis Batch: 709702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - DL	KFTA-DU5A	Post-Treatment	Solid	537 (modified)	707542
320-104757-2 - DL	KFTA-DU5A DUPLICATE	Post-Treatment	Solid	537 (modified)	707542
320-104757-3 - DL	KFTA-DU5A TRIPLICATE	Post-Treatment	Solid	537 (modified)	707542
320-104757-4 - DL	KFTA-DU5B	Post-Treatment	Solid	537 (modified)	707542
320-104757-5 - DL	KFTA-DU5C	Post-Treatment	Solid	537 (modified)	707542

Analysis Batch: 709703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - DL	KFTA-DU5A	Pre-Treatment	Solid	537 (modified)	707544
320-104757-2 - DL	KFTA-DU5A DUPLICATE	Pre-Treatment	Solid	537 (modified)	707544
320-104757-3 - DL	KFTA-DU5A TRIPLICATE	Pre-Treatment	Solid	537 (modified)	707544
320-104757-4 - DL	KFTA-DU5B	Pre-Treatment	Solid	537 (modified)	707544
320-104757-5 - DL	KFTA-DU5C	Pre-Treatment	Solid	537 (modified)	707544

Prep Batch: 710936

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - RE	KFTA-DU5A	Post-Treatment	Solid	TOP Post-Prep	
320-104757-2 - RE	KFTA-DU5A DUPLICATE	Post-Treatment	Solid	TOP Post-Prep	
320-104757-3 - RE	KFTA-DU5A TRIPLICATE	Post-Treatment	Solid	TOP Post-Prep	
320-104757-4 - RE	KFTA-DU5B	Post-Treatment	Solid	TOP Post-Prep	
320-104757-5 - RE	KFTA-DU5C	Post-Treatment	Solid	TOP Post-Prep	
MB 320-710936/1-A	Method Blank	Post-Treatment	Solid	TOP Post-Prep	
LCS 320-710936/2-A	Lab Control Sample	Post-Treatment	Solid	TOP Post-Prep	
LCSD 320-710936/3-A	Lab Control Sample Dup	Post-Treatment	Solid	TOP Post-Prep	

Prep Batch: 710937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - RE	KFTA-DU5A	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-2 - RE	KFTA-DU5A DUPLICATE	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-3 - RE	KFTA-DU5A TRIPLICATE	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-4 - RE	KFTA-DU5B	Pre-Treatment	Solid	TOP Pre-Prep	
320-104757-5 - RE	KFTA-DU5C	Pre-Treatment	Solid	TOP Pre-Prep	
MB 320-710937/1-A	Method Blank	Pre-Treatment	Solid	TOP Pre-Prep	
LCS 320-710937/2-A	Lab Control Sample	Pre-Treatment	Solid	TOP Pre-Prep	
LCSD 320-710937/3-A	Lab Control Sample Dup	Pre-Treatment	Solid	TOP Pre-Prep	

Analysis Batch: 713697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - RE	KFTA-DU5A	Pre-Treatment	Solid	537 (modified)	710937
320-104757-2 - RE	KFTA-DU5A DUPLICATE	Pre-Treatment	Solid	537 (modified)	710937
320-104757-3 - RE	KFTA-DU5A TRIPLICATE	Pre-Treatment	Solid	537 (modified)	710937
320-104757-4 - RE	KFTA-DU5B	Pre-Treatment	Solid	537 (modified)	710937
320-104757-5 - RE	KFTA-DU5C	Pre-Treatment	Solid	537 (modified)	710937
MB 320-710937/1-A	Method Blank	Pre-Treatment	Solid	537 (modified)	710937
LCS 320-710937/2-A	Lab Control Sample	Pre-Treatment	Solid	537 (modified)	710937
LCSD 320-710937/3-A	Lab Control Sample Dup	Pre-Treatment	Solid	537 (modified)	710937

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QC Association Summary

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

Job ID: 320-104757-1

LCMS

Analysis Batch: 713698

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - RE	KFTA-DU5A	Post-Treatment	Solid	537 (modified)	710936
320-104757-2 - RE	KFTA-DU5A DUPLICATE	Post-Treatment	Solid	537 (modified)	710936
320-104757-3 - RE	KFTA-DU5A TRIPLICATE	Post-Treatment	Solid	537 (modified)	710936
320-104757-4 - RE	KFTA-DU5B	Post-Treatment	Solid	537 (modified)	710936
320-104757-5 - RE	KFTA-DU5C	Post-Treatment	Solid	537 (modified)	710936
MB 320-710936/1-A	Method Blank	Post-Treatment	Solid	537 (modified)	710936
LCS 320-710936/2-A	Lab Control Sample	Post-Treatment	Solid	537 (modified)	710936
LCSD 320-710936/3-A	Lab Control Sample Dup	Post-Treatment	Solid	537 (modified)	710936

Prep Batch: 716086

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - IN3	KFTA-DU5A	SPLP West	Solid	TOP Post Prep	706527
320-104757-2 - IN3	KFTA-DU5A DUPLICATE	SPLP West	Solid	TOP Post Prep	706527
320-104757-3 - IN3	KFTA-DU5A TRIPLICATE	SPLP West	Solid	TOP Post Prep	706527
LB 320-716086/4-A	Method Blank	Post-Treatment	Solid	TOP Post Prep	
MB 320-716086/1-A	Method Blank	Post-Treatment	Solid	TOP Post Prep	
LCS 320-716086/2-A	Lab Control Sample	Post-Treatment	Solid	TOP Post Prep	
LCSD 320-716086/3-A	Lab Control Sample Dup	Post-Treatment	Solid	TOP Post Prep	

Prep Batch: 716087

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - RE3	KFTA-DU5A	SPLP West	Solid	TOP Pre - Prep	706527
320-104757-2 - RE3	KFTA-DU5A DUPLICATE	SPLP West	Solid	TOP Pre - Prep	706527
320-104757-3 - RE3	KFTA-DU5A TRIPLICATE	SPLP West	Solid	TOP Pre - Prep	706527
LB 320-716087/4-A	Method Blank	Pre-Treatment	Solid	TOP Pre - Prep	
MB 320-716087/1-A	Method Blank	Pre-Treatment	Solid	TOP Pre - Prep	
LCS 320-716087/2-A	Lab Control Sample	Pre-Treatment	Solid	TOP Pre - Prep	
LCSD 320-716087/3-A	Lab Control Sample Dup	Pre-Treatment	Solid	TOP Pre - Prep	

Analysis Batch: 716979

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1 - RE3	KFTA-DU5A	SPLP West	Solid	537 (modified)	716087
320-104757-1 - IN3	KFTA-DU5A	SPLP West	Solid	537 (modified)	716086
320-104757-2 - RE3	KFTA-DU5A DUPLICATE	SPLP West	Solid	537 (modified)	716087
320-104757-2 - IN3	KFTA-DU5A DUPLICATE	SPLP West	Solid	537 (modified)	716086
320-104757-3 - RE3	KFTA-DU5A TRIPLICATE	SPLP West	Solid	537 (modified)	716087
320-104757-3 - IN3	KFTA-DU5A TRIPLICATE	SPLP West	Solid	537 (modified)	716086
LB 320-716086/4-A	Method Blank	Post-Treatment	Solid	537 (modified)	716086
LB 320-716087/4-A	Method Blank	Pre-Treatment	Solid	537 (modified)	716087
MB 320-716086/1-A	Method Blank	Post-Treatment	Solid	537 (modified)	716086
MB 320-716087/1-A	Method Blank	Pre-Treatment	Solid	537 (modified)	716087
LCS 320-716086/2-A	Lab Control Sample	Post-Treatment	Solid	537 (modified)	716086
LCS 320-716087/2-A	Lab Control Sample	Pre-Treatment	Solid	537 (modified)	716087
LCSD 320-716086/3-A	Lab Control Sample Dup	Post-Treatment	Solid	537 (modified)	716086
LCSD 320-716087/3-A	Lab Control Sample Dup	Pre-Treatment	Solid	537 (modified)	716087

Prep Batch: 718918

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1	KFTA-DU5A	Total/NA	Solid	EOF Prep	
320-104757-4	KFTA-DU5B	Total/NA	Solid	EOF Prep	
320-104757-5	KFTA-DU5C	Total/NA	Solid	EOF Prep	

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QC Association Summary

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

Job ID: 320-104757-1

LCMS (Continued)

Prep Batch: 718918 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-718918/1-A	Method Blank	Total/NA	Solid	EOF Prep	
LCS 320-718918/2-A	Lab Control Sample	Total/NA	Solid	EOF Prep	
LCSD 320-718918/3-A	Lab Control Sample Dup	Total/NA	Solid	EOF Prep	

Analysis Batch: 719404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1	KFTA-DU5A	Total/NA	Solid	CIC EOF	718918
320-104757-4	KFTA-DU5B	Total/NA	Solid	CIC EOF	718918
320-104757-5	KFTA-DU5C	Total/NA	Solid	CIC EOF	718918
MB 320-718918/1-A	Method Blank	Total/NA	Solid	CIC EOF	718918
LCS 320-718918/2-A	Lab Control Sample	Total/NA	Solid	CIC EOF	718918
LCSD 320-718918/3-A	Lab Control Sample Dup	Total/NA	Solid	CIC EOF	718918

General Chemistry

Analysis Batch: 705881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-104757-1	KFTA-DU5A	Total/NA	Solid	Increment, Prep	
320-104757-2	KFTA-DU5A DUPLICATE	Total/NA	Solid	Increment, Prep	
320-104757-3	KFTA-DU5A TRIPLICATE	Total/NA	Solid	Increment, Prep	
320-104757-4	KFTA-DU5B	Total/NA	Solid	Increment, Prep	
320-104757-5	KFTA-DU5C	Total/NA	Solid	Increment, Prep	

Lab Chronicle

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A

Lab Sample ID: 320-104757-1

Date Collected: 09/06/23 11:30

Matrix: Solid

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			1.00 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 08:05	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	DL		1.00 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709702	09/29/23 02:19	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	RE		1.01 g	10.0 mL	710936	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713698	10/17/23 11:30	JRB	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep			1.00 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 11:38	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	DL		1.00 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709703	09/29/23 04:00	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	RE		1.01 g	10.0 mL	710937	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713697	10/17/23 06:58	JRB	EET SAC
SPLP West	Leach	1312	IN2		100.62 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Post Prep	IN2		100.0 mL	10.0 mL	707730	09/20/23 12:55	JER	EET SAC
SPLP West	Analysis	537 (modified)	IN2	1	1 mL	1 mL	708499	09/23/23 06:36	D1R	EET SAC
SPLP West	Leach	1312	RE3		100.62 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Pre - Prep	RE3		5.0 mL	10.0 mL	716087	10/26/23 20:32	FX	EET SAC
SPLP West	Analysis	537 (modified)	RE3	1	1 mL	1 mL	716979	10/31/23 22:58	D1R	EET SAC
SPLP West	Leach	1312	IN3		100.62 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Post Prep	IN3		5.0 mL	10.0 mL	716086	10/26/23 20:32	FX	EET SAC
SPLP West	Analysis	537 (modified)	IN3	1	1 mL	1 mL	716979	11/01/23 00:27	D1R	EET SAC
Total/NA	Prep	EOF Prep			10.00 g	25 mL	718918	11/08/23 13:11	NK	EET SAC
Total/NA	Analysis	CIC EOF		1			719404	11/10/23 03:10	NK	EET SAC
Total/NA	Analysis	Increment, Prep		1			705881	09/13/23 14:08	VMN	EET SAC

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

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			1.03 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 08:17	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	DL		1.03 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709702	09/29/23 02:30	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	RE		1.02 g	10.0 mL	710936	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713698	10/17/23 11:42	JRB	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep			1.03 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 11:49	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	DL		1.03 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709703	09/29/23 04:11	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	RE		1.02 g	10.0 mL	710937	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713697	10/17/23 07:09	JRB	EET SAC
SPLP West	Leach	1312	IN2		100.05 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Post Prep	IN2		100.0 mL	10.0 mL	707730	09/20/23 12:55	JER	EET SAC
SPLP West	Analysis	537 (modified)	IN2	1	1 mL	1 mL	708499	09/23/23 06:47	D1R	EET SAC

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Lab Chronicle

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5A DUPLICATE

Lab Sample ID: 320-104757-2

Date Collected: 09/06/23 11:30

Matrix: Solid

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
SPLP West	Leach	1312	RE3		100.05 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Pre - Prep	RE3		5.0 mL	10.0 mL	716087	10/26/23 20:32	FX	EET SAC
SPLP West	Analysis	537 (modified)	RE3	1	1 mL	1 mL	716979	10/31/23 23:09	D1R	EET SAC
SPLP West	Leach	1312	IN3		100.05 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Post Prep	IN3		5.0 mL	10.0 mL	716086	10/26/23 20:32	FX	EET SAC
SPLP West	Analysis	537 (modified)	IN3	1	1 mL	1 mL	716979	11/01/23 00:39	D1R	EET SAC
Total/NA	Analysis	Increment, Prep		1			705881	09/13/23 14:08	VMN	EET SAC

Client Sample ID: KFTA-DU5A TRIPLICATE

Lab Sample ID: 320-104757-3

Date Collected: 09/06/23 11:30

Matrix: Solid

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			1.06 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 08:28	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	DL		1.06 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709702	09/29/23 02:41	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	RE		1.01 g	10.0 mL	710936	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713698	10/17/23 11:53	JRB	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep			1.06 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 12:00	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	DL		1.06 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709703	09/29/23 04:22	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	RE		1.02 g	10.0 mL	710937	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713697	10/17/23 07:21	JRB	EET SAC
SPLP West	Leach	1312	IN2		100.09 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Post Prep	IN2		100.0 mL	10.0 mL	707730	09/20/23 12:55	JER	EET SAC
SPLP West	Analysis	537 (modified)	IN2	1	1 mL	1 mL	708499	09/23/23 06:58	D1R	EET SAC
SPLP West	Leach	1312	RE3		100.09 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Pre - Prep	RE3		5.0 mL	10.0 mL	716087	10/26/23 20:32	FX	EET SAC
SPLP West	Analysis	537 (modified)	RE3	1	1 mL	1 mL	716979	10/31/23 23:21	D1R	EET SAC
SPLP West	Leach	1312	IN3		100.09 g	2000 mL	706527	09/15/23 15:15	GSH	EET SAC
SPLP West	Prep	TOP Post Prep	IN3		5.0 mL	10.0 mL	716086	10/26/23 20:32	FX	EET SAC
SPLP West	Analysis	537 (modified)	IN3	1	1 mL	1 mL	716979	11/01/23 00:50	D1R	EET SAC
Total/NA	Analysis	Increment, Prep		1			705881	09/13/23 14:08	VMN	EET SAC

Client Sample ID: KFTA-DU5B

Lab Sample ID: 320-104757-4

Date Collected: 09/06/23 11:30

Matrix: Solid

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			1.03 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 08:39	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	DL		1.03 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709702	09/29/23 02:52	D1R	EET SAC

Eurofins Sacramento

Lab Chronicle

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

Job ID: 320-104757-1

Client Sample ID: KFTA-DU5B

Lab Sample ID: 320-104757-4

Date Collected: 09/06/23 11:30

Matrix: Solid

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	RE		1.03 g	10.0 mL	710936	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713698	10/17/23 12:04	JRB	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep			1.03 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 12:12	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	DL		1.03 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709703	09/29/23 04:33	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	RE		1.03 g	10.0 mL	710937	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713697	10/17/23 07:32	JRB	EET SAC
Total/NA	Prep	EOF Prep			10.01 g	25 mL	718918	11/08/23 13:11	NK	EET SAC
Total/NA	Analysis	CIC EOF		1			719404	11/10/23 03:36	NK	EET SAC
Total/NA	Analysis	Increment, Prep		1			705881	09/13/23 14:08	VMN	EET SAC

Client Sample ID: KFTA-DU5C

Lab Sample ID: 320-104757-5

Date Collected: 09/06/23 11:30

Matrix: Solid

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			1.01 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 08:50	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	DL		1.01 g	10.0 mL	707542	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709702	09/29/23 03:04	D1R	EET SAC
Post-Treatment	Prep	TOP Post-Prep	RE		1.01 g	10.0 mL	710936	09/19/23 21:50	FX	EET SAC
Post-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713698	10/17/23 12:15	JRB	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep			1.01 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	708499	09/23/23 12:23	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	DL		1.01 g	10.0 mL	707544	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	DL	20	1 mL	1 mL	709703	09/29/23 04:44	D1R	EET SAC
Pre-Treatment	Prep	TOP Pre-Prep	RE		1.01 g	10.0 mL	710937	09/19/23 22:00	FX	EET SAC
Pre-Treatment	Analysis	537 (modified)	RE	1	1 mL	1 mL	713697	10/17/23 07:43	JRB	EET SAC
Total/NA	Prep	EOF Prep			10.00 g	25 mL	718918	11/08/23 13:11	NK	EET SAC
Total/NA	Analysis	CIC EOF		1			719404	11/10/23 04:55	NK	EET SAC
Total/NA	Analysis	Increment, Prep		1			705881	09/13/23 14:08	VMN	EET SAC

Client Sample ID: KFTA-DU5A SPLP LEACHATE

Lab Sample ID: 320-104757-6

Date Collected: 09/06/23 11:30

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
Total/NA	Prep	NONE			50 mL	0.2 mL	429043	10/09/23 13:39	F9DU	ELLE
Total/NA	Analysis	ELLE SOP		1			429397	10/09/23 17:12	F9DU	ELLE

Lab Chronicle

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

Job ID: 320-104757-1

Client Sample ID: SPLP lab blank

Lab Sample ID: 320-104757-7

Date Collected: 09/06/23 11:30

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
Total/NA	Prep	NONE			100 mL	0.2 mL	426127	10/02/23 10:31	QLP7	ELLE
Total/NA	Analysis	ELLE SOP		1			427657	10/03/23 18:36	QLP7	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: 320-104757-1

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

Accreditation/Certification Summary

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

Job ID: 320-104757-1

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

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

Accreditation/Certification Summary

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

Job ID: 320-104757-1

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

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	TOP Post-Prep	Solid	Perfluoro-4-methoxybutanoic acid (PFMBA)
537 (modified)	TOP Post-Prep	Solid	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	TOP Post-Prep	Solid	Perfluorobutanoic acid (PFBA)
537 (modified)	TOP Post-Prep	Solid	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	TOP Post-Prep	Solid	Perfluorodecanoic acid (PFDA)
537 (modified)	TOP Post-Prep	Solid	Perfluorododecanesulfonic acid (PFDoS)
537 (modified)	TOP Post-Prep	Solid	Perfluorododecanoic acid (PFDoA)
537 (modified)	TOP Post-Prep	Solid	Perfluoroheptanesulfonic acid (PFHpS)
537 (modified)	TOP Post-Prep	Solid	Perfluoroheptanoic acid (PFHpA)
537 (modified)	TOP Post-Prep	Solid	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	TOP Post-Prep	Solid	Perfluorohexanoic acid (PFHxA)
537 (modified)	TOP Post-Prep	Solid	Perfluorononanesulfonic acid (PFNS)
537 (modified)	TOP Post-Prep	Solid	Perfluorononanoic acid (PFNA)
537 (modified)	TOP Post-Prep	Solid	Perfluorooctanesulfonamide (FOSA)
537 (modified)	TOP Post-Prep	Solid	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	TOP Post-Prep	Solid	Perfluorooctanoic acid (PFOA)
537 (modified)	TOP Post-Prep	Solid	Perfluoropentanesulfonic acid (PFPeS)
537 (modified)	TOP Post-Prep	Solid	Perfluoropentanoic acid (PFPeA)
537 (modified)	TOP Post-Prep	Solid	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	TOP Post-Prep	Solid	Perfluorotridecanoic acid (PFTrDA)
537 (modified)	TOP Post-Prep	Solid	Perfluoroundecanoic acid (PFUnA)
537 (modified)	TOP Pre - Prep	Solid	11-Chloroheicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537 (modified)	TOP Pre - Prep	Solid	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
537 (modified)	TOP Pre - Prep	Solid	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
537 (modified)	TOP Pre - Prep	Solid	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
537 (modified)	TOP Pre - Prep	Solid	3-Perfluoroheptylpropanoic acid (7:3 FTCA)
537 (modified)	TOP Pre - Prep	Solid	3-Perfluoropentylpropanoic acid (5:3 FTCA)
537 (modified)	TOP Pre - Prep	Solid	3-Perfluoropropylpropanoic acid (3:3 FTCA)
537 (modified)	TOP Pre - Prep	Solid	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537 (modified)	TOP Pre - Prep	Solid	6:2 FTUCA
537 (modified)	TOP Pre - Prep	Solid	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)
537 (modified)	TOP Pre - Prep	Solid	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537 (modified)	TOP Pre - Prep	Solid	N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	TOP Pre - Prep	Solid	N-ethylperfluorooctane sulfonamide (NEtFOSA)
537 (modified)	TOP Pre - Prep	Solid	N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)

Accreditation/Certification Summary

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

Job ID: 320-104757-1

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

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	TOP Pre - Prep	Solid	N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	TOP Pre - Prep	Solid	N-methylperfluorooctane sulfonamide (NMeFOSA)
537 (modified)	TOP Pre - Prep	Solid	N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)
537 (modified)	TOP Pre - Prep	Solid	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
537 (modified)	TOP Pre - Prep	Solid	Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)
537 (modified)	TOP Pre - Prep	Solid	Perfluoro-3-methoxypropanoic acid (PFMPA)
537 (modified)	TOP Pre - Prep	Solid	Perfluoro-4-methoxybutanoic acid (PFMBA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	TOP Pre - Prep	Solid	Perfluorobutanoic acid (PFBA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	TOP Pre - Prep	Solid	Perfluorodecanoic acid (PFDA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorododecanesulfonic acid (PFDoS)
537 (modified)	TOP Pre - Prep	Solid	Perfluorododecanoic acid (PFDoA)
537 (modified)	TOP Pre - Prep	Solid	Perfluoroheptanesulfonic acid (PFHpS)
537 (modified)	TOP Pre - Prep	Solid	Perfluoroheptanoic acid (PFHpA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	TOP Pre - Prep	Solid	Perfluorohexanoic acid (PFHxA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorononanesulfonic acid (PFNS)
537 (modified)	TOP Pre - Prep	Solid	Perfluorononanoic acid (PFNA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorooctanesulfonamide (FOSA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	TOP Pre - Prep	Solid	Perfluorooctanoic acid (PFOA)
537 (modified)	TOP Pre - Prep	Solid	Perfluoropentanesulfonic acid (PFPeS)
537 (modified)	TOP Pre - Prep	Solid	Perfluoropentanoic acid (PFPeA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	TOP Pre - Prep	Solid	Perfluorotridecanoic acid (PFTrDA)
537 (modified)	TOP Pre - Prep	Solid	Perfluoroundecanoic acid (PFUnA)
537 (modified)	TOP Pre-Prep	Solid	11-Chloroeicosafuoro-3-oxaundecane-1-s ulfonic acid (11Cl-PF3OUdS)
537 (modified)	TOP Pre-Prep	Solid	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
537 (modified)	TOP Pre-Prep	Solid	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
537 (modified)	TOP Pre-Prep	Solid	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
537 (modified)	TOP Pre-Prep	Solid	3-Perfluoroheptylpropanoic acid (7:3 FTCA)
537 (modified)	TOP Pre-Prep	Solid	3-Perfluoropentylpropanoic acid (5:3 FTCA)
537 (modified)	TOP Pre-Prep	Solid	3-Perfluoropropylpropanoic acid (3:3 FTCA)

Accreditation/Certification Summary

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

Job ID: 320-104757-1

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	Solid	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537 (modified)	TOP Pre-Prep	Solid	6:2 FTUCA
537 (modified)	TOP Pre-Prep	Solid	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)
537 (modified)	TOP Pre-Prep	Solid	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537 (modified)	TOP Pre-Prep	Solid	N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	TOP Pre-Prep	Solid	N-ethylperfluorooctane sulfonamide (NEtFOSA)
537 (modified)	TOP Pre-Prep	Solid	N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)
537 (modified)	TOP Pre-Prep	Solid	N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	TOP Pre-Prep	Solid	N-methylperfluorooctane sulfonamide (NMeFOSA)
537 (modified)	TOP Pre-Prep	Solid	N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)
537 (modified)	TOP Pre-Prep	Solid	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
537 (modified)	TOP Pre-Prep	Solid	Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)
537 (modified)	TOP Pre-Prep	Solid	Perfluoro-3-methoxypropanoic acid (PFMPA)
537 (modified)	TOP Pre-Prep	Solid	Perfluoro-4-methoxybutanoic acid (PFMBA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	TOP Pre-Prep	Solid	Perfluorobutanoic acid (PFBA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	TOP Pre-Prep	Solid	Perfluorodecanoic acid (PFDA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorododecanesulfonic acid (PFDoS)
537 (modified)	TOP Pre-Prep	Solid	Perfluorododecanoic acid (PFDoA)
537 (modified)	TOP Pre-Prep	Solid	Perfluoroheptanesulfonic acid (PFHpS)
537 (modified)	TOP Pre-Prep	Solid	Perfluoroheptanoic acid (PFHpA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	TOP Pre-Prep	Solid	Perfluorohexanoic acid (PFHxA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorononanesulfonic acid (PFNS)
537 (modified)	TOP Pre-Prep	Solid	Perfluorononanoic acid (PFNA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorooctanesulfonamide (FOSA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	TOP Pre-Prep	Solid	Perfluorooctanoic acid (PFOA)
537 (modified)	TOP Pre-Prep	Solid	Perfluoropentanesulfonic acid (PFPeS)
537 (modified)	TOP Pre-Prep	Solid	Perfluoropentanoic acid (PFPeA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	TOP Pre-Prep	Solid	Perfluorotridecanoic acid (PFTTrDA)
537 (modified)	TOP Pre-Prep	Solid	Perfluoroundecanoic acid (PFUnA)
CIC EOF	EOF Prep	Solid	Extractable Organic Fluorine (EOF)
Increment, Prep		Solid	Incremented sample generated

Accreditation/Certification Summary

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

Job ID: 320-104757-1

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
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

Accreditation/Certification Summary

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

Job ID: 320-104757-1

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
West Virginia DEP	State	055	07-31-24
Wyoming	State	8TMS-L	01-31-24
Wyoming (UST)	A2LA	0001.01	11-30-24

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Method Summary

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

Job ID: 320-104757-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
CIC EOF	Extractable Organic Fluorine by Combustion Ion Chromatography	Lab SOP	EET SAC
ELLE SOP	Total or Organic Fluorine by Combustion Ion Chromatography	ELLE - Lancaster	ELLE
Increment, Prep 1312	ISM - Custom ISM procedure SPLP Extraction	EPA SW846	EET SAC EET SAC
EOF Prep	Preparation, Extractable Organic Fluorine	Lab SOP	EET SAC
NONE	Preparation, Fluorine	ELLE - Lancaster	ELLE
TOP Post Prep	Solid-Phase Extraction (SPE)	SW846	EET SAC
TOP Post-Prep	Shake Extraction with Ultrasonic Bath Extraction	SW846	EET SAC
TOP Pre - Prep	Solid-Phase Extraction (SPE)	SW846	EET SAC
TOP Pre-Prep	Shake Extraction with Ultrasonic Bath Extraction	SW846	EET SAC

Protocol References:

- ELLE - Lancaster = Eurofins Lancaster, Facility Standard Operating Procedure.
- EPA = US Environmental Protection Agency
- Lab SOP = Laboratory Standard Operating Procedure
- 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: 320-104757-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-104757-1	KFTA-DU5A	Solid	09/06/23 11:30	09/12/23 09:30
320-104757-2	KFTA-DU5A DUPLICATE	Solid	09/06/23 11:30	09/12/23 09:30
320-104757-3	KFTA-DU5A TRIPLICATE	Solid	09/06/23 11:30	09/12/23 09:30
320-104757-4	KFTA-DU5B	Solid	09/06/23 11:30	09/12/23 09:30
320-104757-5	KFTA-DU5C	Solid	09/06/23 11:30	09/12/23 09:30
320-104757-6	KFTA-DU5A SPLP LEACHATE	Water	09/06/23 11:30	09/12/23 09:30
320-104757-7	SPLP lab blank	Water	09/06/23 11:30	09/12/23 09:30

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Report to: roger.brewer@doh.hawaii.gov
 Invoice To: Tetra Tech
 Address: 737 Bishop St, Suite 2340 Honolulu HI 96813

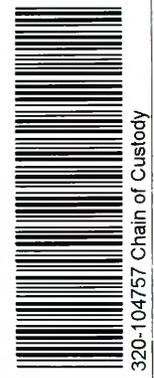
Contact: Eric Jensen
 808-225-7084
 eric.jensen@tetratech.com

703589
 eurofins

Environment Testing
 America

TAL-8210

Client Contact Company Name: Hawaii Dept of Health Address: 2385 Waimanalo Home Rd, HI City/State/Zip: Pearl City, HI 96872 Phone: 808-586-4249 Fax: Project Name: Kahului Fire Training Area Site: P O #		Project Manager: Roger Brewer Tell/Email: See Above Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Regulatory Program: <input type="checkbox"/> DW <input type="checkbox"/> NPDES <input type="checkbox"/> RCRA <input type="checkbox"/> Other:		Site Contact: Lab Contact: Karen Dahl Date: _____ Carrier: _____		COC No: _____ of _____ COCs Sampler: For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.: Sample Specific Notes:			
Sample Identification KFTA-DU5A KFTA-DU5B KFTA-DU5C		Sample Date 9/6/23 11 11		Sample Time 11:30 am 11 11		Sample Type (C=Comp, G=Grab) G C C		Matrix Soil C C		# of Cont. 1 1 1	
Preservation: 1= Ice 2= HCl; 3= H2SO4; 4=HNO3; 5= Formalin 6= Neutral Possible Hazard Identification: _____ Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown											
Special Instructions/QC Requirements & Comments: -MI (ISA) process: air dry, sieve -Tetra Tech Laboratory Subsample triplicate on KFTA-DU5A * minimum 10 gram subsamples for testing * sampler from AFFF impacted site * possible high PFAS concentration CUSTODY SEAL NO.: 7106599 Cooler Temp. (°C): Obs'd: 5.7 Corr'd: 5.7 Therm ID No.: Relinquished by: <i>Priscilla B</i> Date/Time: 9/12/23 09:30 Company: HDOH Received by: <i>GET SNA</i> Date/Time: Company:											
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months											



- 1
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- 14
- 15



Environment Testing

Sacramento
Sample Receiving Notes

Tracking # 9836 2131 5160

Loc 320

Job 104757

SO / PO / FO / SAT (2-Day) / Ground / UPS / CDO / Courier
GSL / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal Cooler Custody Seal Temperature & corrected Temperature & other observations.
File in the job folder with the COC

Therm ID <u>602</u> Corr Factor: (+ / -) _____ °C	Notes _____ _____ _____ _____ _____ _____ _____ _____ _____ _____																																																															
Ice _____ Wet _____ Gel <input checked="" type="checkbox"/> Other _____																																																																
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*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Login Sample Receipt Checklist

Client: Hawaii Department of Health

Job Number: 320-104757-1

Login Number: 104757

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	REFER TO SSRN
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 <math><6\text{mm}</math> (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: 320-104757-1

Login Number: 104757

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

List Number: 2

List Creation: 09/20/23 04:03 PM

Creator: McBeth, Jessica

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 ($\leq 6^{\circ}\text{C}$, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temp acceptable, where thermal pres is required ($\leq 6^{\circ}\text{C}$, 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	