

ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

HRS-340E - RED-HILL - INTERA

JOB NUMBER

380-56685-1

Eurofins Eaton Analytical Pomona

Job Notes

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

Compliance Statement

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

Authorization



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Definitions/Glossary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

Qualifiers

LCMS

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

Job ID: 380-56685-1

Laboratory: Eurofins Eaton Analytical Pomona

Narrative

Job Narrative 380-56685-1

Comments

No additional comments.

Receipt

The samples were received on 7/27/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.4° C.

LCMS

Method 533: The following QC issues were observed for prep batch#52106 and/or analytical batch#52581. Several IDAs recovered low outside of method limits for MBLK, MRL, LCS and LCSD. The following samples were passed holding time or have no more backup bottles: BWS2253-J1-AQ (380-56685-1) and BWS2253-J1-FB (380-56685-2). Results are not acceptable per method and require re-sampling.

Method 533: IPS-13C4-PFOS recovered outside of method limits for FB sample: BWS2253-J1-FB (380-56685-2). No backup bottle to re-extract.

533 Data excluded due to this QC failure, 537.1 data was reported as there were no noted QC issues.

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

Organic Prep

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

Detection Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

Client Sample ID: BWS2253-J1-AQ

Lab Sample ID: 380-56685-1

No Detections.

Client Sample ID: BWS2253-J1-FB

Lab Sample ID: 380-56685-2

No Detections.

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

This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

Client Sample ID: BWS2253-J1-AQ

Lab Sample ID: 380-56685-1

Date Collected: 07/26/23 10:30

Matrix: Water

Date Received: 07/27/23 10:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		08/02/23 05:52	08/04/23 20:14	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	122		70 - 130			08/02/23 05:52	08/04/23 20:14	1
13C2 PFHxA	107		70 - 130			08/02/23 05:52	08/04/23 20:14	1
13C2 PFDA	111		70 - 130			08/02/23 05:52	08/04/23 20:14	1
13C3-GenX	98		70 - 130			08/02/23 05:52	08/04/23 20:14	1

Client Sample ID: BWS2253-J1-FB

Lab Sample ID: 380-56685-2

Date Collected: 07/26/23 10:30

Matrix: Water

Date Received: 07/27/23 10:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
N-methylperfluorooctanesulfonamideacetic acid (NMeFOSAA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
N-ethylperfluorooctanesulfonamideacetic acid (NEtFOSAA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1

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Client Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

Client Sample ID: BWS2253-J1-FB

Lab Sample ID: 380-56685-2

Date Collected: 07/26/23 10:30

Matrix: Water

Date Received: 07/27/23 10:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0	ng/L		08/02/23 10:55	08/05/23 04:53	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	112		70 - 130			08/02/23 10:55	08/05/23 04:53	1
13C2 PFHxA	117		70 - 130			08/02/23 10:55	08/05/23 04:53	1
13C2 PFDA	108		70 - 130			08/02/23 10:55	08/05/23 04:53	1
13C3-GenX	108		70 - 130			08/02/23 10:55	08/05/23 04:53	1

Surrogate Summary

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d5NEFOS	PFHxA	PFDA	GenX
		(70-130)	(70-130)	(70-130)	(70-130)
380-56551-A-1-B DU	Duplicate	119	116	112	109
380-56551-A-1-C MS	Matrix Spike	116	126	128	121
380-56551-A-1-D MSD	Matrix Spike Duplicate	115	124	119	117
380-56685-1	BWS2253-J1-AQ	122	107	111	98
380-56685-2	BWS2253-J1-FB	112	117	108	108
380-56757-B-9-A MS	Matrix Spike	111	128	119	118
380-56757-C-9-A MSD	Matrix Spike Duplicate	106	101	110	96
LCS 380-49928/25-A	Lab Control Sample	110	128	119	123
LCS 380-49990/19-A	Lab Control Sample	112	125	118	116
LCSD 380-49928/26-A	Lab Control Sample Dup	108	119	109	112
LCSD 380-49990/20-A	Lab Control Sample Dup	108	127	111	120
MBL 380-49928/23-A	Method Blank	118	111	108	104
MBL 380-49990/17-A	Method Blank	119	118	127	115
MRL 380-49928/24-A	Lab Control Sample	121	124	128	115
MRL 380-49990/18-A	Lab Control Sample	110	124	130	118

Surrogate Legend

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

Isotope Dilution Summary

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (50-200)	C6PFDA (50-200)	13C5PHA (50-200)	C4PFHA (50-200)	C8PFOA (50-200)	C9PFNA (50-200)	13C7PUA (50-200)	PFDoA (50-200)
380-56685-1	BWS2253-J1-AQ	65 ^3-	82	76	80	77	81	81	96
380-56685-1 LMS	BWS2253-J1-AQ	62 ^3-	72	72	79	72	71	74	85
380-56685-1 LMSD	BWS2253-J1-AQ	39 *5-	48 *5-	46 *5-	50	43 *5-	46 *5-	53	68
380-56685-2	BWS2253-J1-FB	50 ^3-	85	60	67	70	79	84	94
LCS 380-52106/25-A	Lab Control Sample	37 *5-	51	42 *5-	45 *5-	37 *5-	44 *5-	66	74
LCSD 380-52106/26-A	Lab Control Sample Dup	40 *5-	55	47 *5-	46 *5-	41 *5-	45 *5-	67	76
MBL 380-52106/23-A	Method Blank	43 *5-	71	53	58	53	60	74	90
MRL 380-52106/24-A	Lab Control Sample	43 *5- ^3-	73	53	55	54	62	79	87

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFBA (50-200)	PFPeA (50-200)	C3PFBS (50-200)	C3PFHS (50-200)	C8PFOS (50-200)	42FTS (50-200)	62FTS (50-200)	82FTS (50-200)
380-56685-1	BWS2253-J1-AQ	86	86	89	63	94	100	96	102
380-56685-1 LMS	BWS2253-J1-AQ	83	80	92	59	95	108	100	99
380-56685-1 LMSD	BWS2253-J1-AQ	62	57	80	51	93	100	95	104
380-56685-2	BWS2253-J1-FB	64	65	93	59	93	97	95	96
LCS 380-52106/25-A	Lab Control Sample	44 *5-	42 *5-	90	58	90	90	86	84
LCSD 380-52106/26-A	Lab Control Sample Dup	46 *5-	48 *5-	90	67	95	91	89	93
MBL 380-52106/23-A	Method Blank	56	54	101	72	112	113	104	137
MRL 380-52106/24-A	Lab Control Sample	57	57	90	58	94	96	93	91

Surrogate Legend

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

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: MBL 380-49928/23-A
Matrix: Water
Analysis Batch: 50419

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49928

Analyte	MBL Result	MBL Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorobutanesulfonic acid (PFBS)	0.580	J	2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<0.30		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		08/02/23 05:52	08/04/23 17:28	1

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	118		70 - 130	08/02/23 05:52	08/04/23 17:28	1
13C2 PFHxA	111		70 - 130	08/02/23 05:52	08/04/23 17:28	1
13C2 PFDA	108		70 - 130	08/02/23 05:52	08/04/23 17:28	1
13C3-GenX	104		70 - 130	08/02/23 05:52	08/04/23 17:28	1

Lab Sample ID: LCS 380-49928/25-A
Matrix: Water
Analysis Batch: 50570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49928

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	50.1	48.9		ng/L		98	70 - 130
Perfluorooctanesulfonic acid (PFOS)	46.4	47.5		ng/L		102	70 - 130
Perfluoroundecanoic acid (PFUnA)	50.1	48.5		ng/L		97	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	50.1	49.6		ng/L		99	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	50.1	48.8		ng/L		97	70 - 130
Perfluorohexanoic acid (PFHxA)	50.1	51.1		ng/L		102	70 - 130
Perfluorododecanoic acid (PFDoA)	50.1	48.4		ng/L		97	70 - 130
Perfluorooctanoic acid (PFOA)	50.1	53.5		ng/L		107	70 - 130
Perfluorodecanoic acid (PFDA)	50.1	51.4		ng/L		103	70 - 130

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: LCS 380-49928/25-A
Matrix: Water
Analysis Batch: 50570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49928

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorohexanesulfonic acid (PFHxS)	45.7	50.9		ng/L		111	70 - 130
Perfluorobutanesulfonic acid (PFBS)	44.3	46.8		ng/L		105	70 - 130
Perfluoroheptanoic acid (PFHpA)	50.1	54.7		ng/L		109	70 - 130
Perfluorononanoic acid (PFNA)	50.1	51.9		ng/L		104	70 - 130
Perfluorotetradecanoic acid (PFTA)	50.1	48.6		ng/L		97	70 - 130
Perfluorotridecanoic acid (PFTTrDA)	50.1	49.6		ng/L		99	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	46.8	50.6		ng/L		108	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	47.3	45.7		ng/L		96	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	47.3	50.0		ng/L		106	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
d5-NEtFOSAA	110		70 - 130
13C2 PFHxA	128		70 - 130
13C2 PFDA	119		70 - 130
13C3-GenX	123		70 - 130

Lab Sample ID: LCSD 380-49928/26-A
Matrix: Water
Analysis Batch: 50570

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49928

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	50.1	48.1		ng/L		96	70 - 130	2	30
Perfluorooctanesulfonic acid (PFOS)	46.4	48.0		ng/L		103	70 - 130	1	30
Perfluoroundecanoic acid (PFUnA)	50.1	48.8		ng/L		97	70 - 130	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	50.1	48.8		ng/L		97	70 - 130	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	50.1	49.3		ng/L		98	70 - 130	1	30
Perfluorohexanoic acid (PFHxA)	50.1	50.1		ng/L		100	70 - 130	2	30
Perfluorododecanoic acid (PFDoA)	50.1	50.6		ng/L		101	70 - 130	5	30
Perfluorooctanoic acid (PFOA)	50.1	49.8		ng/L		99	70 - 130	7	30
Perfluorodecanoic acid (PFDA)	50.1	48.9		ng/L		98	70 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	45.7	52.0		ng/L		114	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)	44.3	47.4		ng/L		107	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	50.1	53.5		ng/L		107	70 - 130	2	30
Perfluorononanoic acid (PFNA)	50.1	51.3		ng/L		102	70 - 130	1	30
Perfluorotetradecanoic acid (PFTA)	50.1	51.7		ng/L		103	70 - 130	6	30

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: LCSD 380-49928/26-A
Matrix: Water
Analysis Batch: 50570

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49928

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorotridecanoic acid (PFTrDA)	50.1	52.4		ng/L		105	70 - 130	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	46.8	47.3		ng/L		101	70 - 130	7	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	47.3	48.4		ng/L		102	70 - 130	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	47.3	48.7		ng/L		103	70 - 130	3	30
LCSD LCSD									
Surrogate	%Recovery	Qualifier	Limits						
d5-NEtFOSAA	108		70 - 130						
13C2 PFHxA	119		70 - 130						
13C2 PFDA	109		70 - 130						
13C3-GenX	112		70 - 130						

Lab Sample ID: MRL 380-49928/24-A
Matrix: Water
Analysis Batch: 50419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49928

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.01	2.26	J	ng/L		113	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	2.18	J	ng/L		117	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.01	2.29	J	ng/L		114	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.01	2.18	J	ng/L		109	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.01	2.45	J	ng/L		122	50 - 150
Perfluorohexanoic acid (PFHxA)	2.01	2.53	J	ng/L		126	50 - 150
Perfluorododecanoic acid (PFDoA)	2.01	2.37	J	ng/L		118	50 - 150
Perfluorooctanoic acid (PFOA)	2.01	2.56	J	ng/L		127	50 - 150
Perfluorodecanoic acid (PFDA)	2.01	2.53	J	ng/L		126	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	2.58	J	ng/L		141	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.78	2.42	J	ng/L		136	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.01	2.56	J	ng/L		128	50 - 150
Perfluorononanoic acid (PFNA)	2.01	2.65	J	ng/L		132	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.01	2.67	J	ng/L		133	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.01	2.33	J	ng/L		116	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	1.88	2.11	J	ng/L		112	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.90	2.04	J	ng/L		108	50 - 150

Eurofins Eaton Analytical Pomona

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: MRL 380-49928/24-A
Matrix: Water
Analysis Batch: 50419

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49928

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.90	2.28	J	ng/L		120	50 - 150
Surrogate							
	%Recovery	MRL	MRL Qualifier	Limits			
d5-NEtFOSAA	121			70 - 130			
13C2 PFHxA	124			70 - 130			
13C2 PFDA	128			70 - 130			
13C3-GenX	115			70 - 130			

Lab Sample ID: 380-56551-A-1-C MS
Matrix: Water
Analysis Batch: 50419

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 49928

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		50.1	49.2		ng/L		98	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		46.4	47.5		ng/L		102	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		50.1	46.1		ng/L		92	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.1	50.0		ng/L		100	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.1	48.4		ng/L		97	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		50.1	49.7		ng/L		98	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		50.1	47.7		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		50.1	51.3		ng/L		101	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		50.1	52.4		ng/L		105	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		45.7	46.7		ng/L		99	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		44.3	43.6		ng/L		96	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		50.1	51.6		ng/L		102	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		50.1	51.9		ng/L		104	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		50.1	53.8		ng/L		107	70 - 130
Perfluorotridecanoic acid (PFTDA)	<2.0		50.1	48.4		ng/L		97	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		46.8	47.3		ng/L		101	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		47.3	44.1		ng/L		93	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		47.3	49.7		ng/L		105	70 - 130
Surrogate									
	%Recovery	MS	MS Qualifier	Limits					
d5-NEtFOSAA	116			70 - 130					
13C2 PFHxA	126			70 - 130					
13C2 PFDA	128			70 - 130					

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: 380-56551-A-1-C MS
Matrix: Water
Analysis Batch: 50419

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 49928

<i>Surrogate</i>	<i>%Recovery</i>	<i>MS MS Qualifier</i>	<i>Limits</i>
13C3-GenX	121		70 - 130

Lab Sample ID: 380-56551-A-1-D MSD
Matrix: Water
Analysis Batch: 50419

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 49928

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		50.1	48.6		ng/L		97	70 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		46.4	46.1		ng/L		99	70 - 130	3	30
Perfluoroundecanoic acid (PFUnA)	<2.0		50.1	46.8		ng/L		93	70 - 130	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.1	47.1		ng/L		94	70 - 130	6	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.1	48.6		ng/L		97	70 - 130	0	30
Perfluorohexanoic acid (PFHxA)	<2.0		50.1	49.3		ng/L		97	70 - 130	1	30
Perfluorododecanoic acid (PFDoA)	<2.0		50.1	47.2		ng/L		94	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	<2.0		50.1	50.9		ng/L		100	70 - 130	1	30
Perfluorodecanoic acid (PFDA)	<2.0		50.1	50.3		ng/L		100	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		45.7	44.9		ng/L		95	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		44.3	43.8		ng/L		97	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	<2.0		50.1	48.7		ng/L		96	70 - 130	6	30
Perfluorononanoic acid (PFNA)	<2.0		50.1	52.8		ng/L		105	70 - 130	2	30
Perfluorotetradecanoic acid (PFTA)	<2.0		50.1	54.8		ng/L		109	70 - 130	2	30
Perfluorotridecanoic acid (PFTrDA)	<2.0		50.1	47.2		ng/L		94	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		46.8	44.4		ng/L		95	70 - 130	6	30
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		47.3	44.0		ng/L		93	70 - 130	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		47.3	45.1		ng/L		95	70 - 130	10	30

<i>Surrogate</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
d5-NEtFOSAA	115		70 - 130
13C2 PFHxA	124		70 - 130
13C2 PFDA	119		70 - 130
13C3-GenX	117		70 - 130

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: 380-56551-A-1-B DU
Matrix: Water
Analysis Batch: 50419

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 49928

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

Surrogate	DU	DU	Limits
	%Recovery	Qualifier	
d5-NEtFOSAA	119		70 - 130
13C2 PFHxA	116		70 - 130
13C2 PFDA	112		70 - 130
13C3-GenX	109		70 - 130

Lab Sample ID: MBL 380-49990/17-A
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49990

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: MBL 380-49990/17-A
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 49990

Analyte	MBL	MBL	RL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier						
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorohexanesulfonic acid (PFHxS)	0.622	J	2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorobutanesulfonic acid (PFBS)	0.568	J	2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorononanoic acid (PFNA)	<0.40		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0	ng/L		08/02/23 10:55	08/05/23 02:56	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	119		70 - 130			08/02/23 10:55	08/05/23 02:56	1
13C2 PFHxA	118		70 - 130			08/02/23 10:55	08/05/23 02:56	1
13C2 PFDA	127		70 - 130			08/02/23 10:55	08/05/23 02:56	1
13C3-GenX	115		70 - 130			08/02/23 10:55	08/05/23 02:56	1

Lab Sample ID: LCS 380-49990/19-A
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49990

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec
							Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	24.6		ng/L		98	70 - 130
Perfluorooctanesulfonic acid (PFOS)	23.2	24.2		ng/L		104	70 - 130
Perfluoroundecanoic acid (PFUnA)	25.1	25.3		ng/L		101	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	23.2		ng/L		93	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	24.3		ng/L		97	70 - 130
Perfluorohexanoic acid (PFHxA)	25.1	25.8		ng/L		103	70 - 130
Perfluorododecanoic acid (PFDoA)	25.1	23.9		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	25.1	26.8		ng/L		107	70 - 130
Perfluorodecanoic acid (PFDA)	25.1	25.6		ng/L		102	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	22.9	24.6		ng/L		107	70 - 130
Perfluorobutanesulfonic acid (PFBS)	22.2	23.3		ng/L		105	70 - 130
Perfluoroheptanoic acid (PFHpA)	25.1	25.9		ng/L		103	70 - 130
Perfluorononanoic acid (PFNA)	25.1	26.1		ng/L		104	70 - 130

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QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: LCS 380-49990/19-A
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49990

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotetradecanoic acid (PFTA)	25.1	21.5		ng/L		86	70 - 130
Perfluorotridecanoic acid (PFTrDA)	25.1	22.6		ng/L		90	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	23.5	22.4		ng/L		95	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	23.7	23.8		ng/L		100	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	23.7	24.2		ng/L		102	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
d5-NEtFOSAA	112		70 - 130
13C2 PFHxA	125		70 - 130
13C2 PFDA	118		70 - 130
13C3-GenX	116		70 - 130

Lab Sample ID: LCSD 380-49990/20-A
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49990

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	25.0		ng/L		100	70 - 130	2	30
Perfluorooctanesulfonic acid (PFOS)	23.2	23.5		ng/L		101	70 - 130	3	30
Perfluoroundecanoic acid (PFUnA)	25.1	22.5		ng/L		90	70 - 130	12	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	22.9		ng/L		91	70 - 130	1	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	23.3		ng/L		93	70 - 130	4	30
Perfluorohexanoic acid (PFHxA)	25.1	25.7		ng/L		103	70 - 130	0	30
Perfluorododecanoic acid (PFDoA)	25.1	23.0		ng/L		92	70 - 130	4	30
Perfluorooctanoic acid (PFOA)	25.1	25.9		ng/L		104	70 - 130	3	30
Perfluorodecanoic acid (PFDA)	25.1	24.1		ng/L		96	70 - 130	6	30
Perfluorohexanesulfonic acid (PFHxS)	22.9	24.7		ng/L		108	70 - 130	0	30
Perfluorobutanesulfonic acid (PFBS)	22.2	23.8		ng/L		107	70 - 130	2	30
Perfluoroheptanoic acid (PFHpA)	25.1	27.0		ng/L		108	70 - 130	4	30
Perfluorononanoic acid (PFNA)	25.1	24.8		ng/L		99	70 - 130	5	30
Perfluorotetradecanoic acid (PFTA)	25.1	20.9		ng/L		83	70 - 130	3	30
Perfluorotridecanoic acid (PFTrDA)	25.1	21.5		ng/L		86	70 - 130	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	23.4	24.2		ng/L		103	70 - 130	8	30

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: LCSD 380-49990/20-A
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 49990

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	23.7	19.9		ng/L		84	70 - 130	18	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	23.7	24.7		ng/L		104	70 - 130	2	30
LCSD LCSD									
Surrogate	%Recovery	Qualifier	Limits						
d5-NEtFOSAA	108		70 - 130						
13C2 PFHxA	127		70 - 130						
13C2 PFDA	111		70 - 130						
13C3-GenX	120		70 - 130						

Lab Sample ID: MRL 380-49990/18-A
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49990

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.01	2.18	J	ng/L		109	50 - 150		
Perfluorooctanesulfonic acid (PFOS)	1.86	1.86	J	ng/L		100	50 - 150		
Perfluoroundecanoic acid (PFUnA)	2.01	2.14	J	ng/L		107	50 - 150		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.01	1.98	J	ng/L		99	50 - 150		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.01	1.95	J	ng/L		97	50 - 150		
Perfluorohexanoic acid (PFHxA)	2.01	2.33	J	ng/L		116	50 - 150		
Perfluorododecanoic acid (PFDoA)	2.01	2.06	J	ng/L		103	50 - 150		
Perfluorooctanoic acid (PFOA)	2.01	2.36	J	ng/L		117	50 - 150		
Perfluorodecanoic acid (PFDA)	2.01	2.28	J	ng/L		114	50 - 150		
Perfluorohexanesulfonic acid (PFHxS)	1.83	2.38	J	ng/L		130	50 - 150		
Perfluorobutanesulfonic acid (PFBS)	1.78	2.19	J	ng/L		123	50 - 150		
Perfluoroheptanoic acid (PFHpA)	2.01	2.17	J	ng/L		108	50 - 150		
Perfluorononanoic acid (PFNA)	2.01	2.56	J	ng/L		128	50 - 150		
Perfluorotetradecanoic acid (PFTA)	2.01	2.33	J	ng/L		116	50 - 150		
Perfluorotridecanoic acid (PFTrDA)	2.01	2.05	J	ng/L		102	50 - 150		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	1.88	1.77	J	ng/L		94	50 - 150		
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.90	1.75	J	ng/L		92	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.90	2.12	J	ng/L		111	50 - 150		

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: MRL 380-49990/18-A
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 49990

<i>Surrogate</i>	<i>MRL %Recovery</i>	<i>MRL Qualifier</i>	<i>Limits</i>
d5-NEtFOSAA	110		70 - 130
13C2 PFHxA	124		70 - 130
13C2 PFDA	130		70 - 130
13C3-GenX	118		70 - 130

Lab Sample ID: 380-56757-B-9-A MS
Matrix: Water
Analysis Batch: 50424

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 49990

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MS Result</i>	<i>MS Qualifier</i>	<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec Limits</i>
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		25.1	26.5		ng/L		106	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		23.2	25.7		ng/L		104	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	25.9		ng/L		103	70 - 130
N-methylperfluorooctanesulfonamide doacetic acid (NMeFOSAA)	<2.0		25.1	23.3		ng/L		93	70 - 130
N-ethylperfluorooctanesulfonamide doacetic acid (NEtFOSAA)	<2.0		25.1	24.0		ng/L		96	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	29.2		ng/L		113	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	25.4		ng/L		101	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		25.1	27.3		ng/L		106	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		25.1	27.2		ng/L		109	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		22.9	24.8		ng/L		103	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		22.2	25.3		ng/L		108	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	28.4		ng/L		111	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		25.1	29.1		ng/L		116	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	25.2		ng/L		101	70 - 130
Perfluorotridecanoic acid (PFTrDA)	<2.0		25.1	24.5		ng/L		98	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		23.4	22.6		ng/L		97	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		23.7	21.8		ng/L		92	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0	F2	23.7	25.9		ng/L		109	70 - 130

<i>Surrogate</i>	<i>MS %Recovery</i>	<i>MS Qualifier</i>	<i>Limits</i>
d5-NEtFOSAA	111		70 - 130
13C2 PFHxA	128		70 - 130
13C2 PFDA	119		70 - 130
13C3-GenX	118		70 - 130

QC Sample Results

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

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

Lab Sample ID: 380-56757-C-9-A MSD

Matrix: Water

Analysis Batch: 50424

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Prep Batch: 49990

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec		RPD	Limit
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		25.1	21.0		ng/L		84	70 - 130	23	30	
Perfluorooctanesulfonic acid (PFOS)	<2.0		23.2	25.4		ng/L		103	70 - 130	1	30	
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	22.1		ng/L		88	70 - 130	16	30	
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	23.1		ng/L		92	70 - 130	1	30	
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.1	22.7		ng/L		91	70 - 130	6	30	
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	22.4		ng/L		86	70 - 130	26	30	
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	21.2		ng/L		85	70 - 130	18	30	
Perfluorooctanoic acid (PFOA)	<2.0		25.1	25.9		ng/L		101	70 - 130	5	30	
Perfluorodecanoic acid (PFDA)	<2.0		25.1	24.3		ng/L		97	70 - 130	11	30	
Perfluorohexanesulfonic acid (PFHxS)	<2.0		22.9	22.1		ng/L		91	70 - 130	11	30	
Perfluorobutanesulfonic acid (PFBS)	<2.0		22.2	22.5		ng/L		96	70 - 130	12	30	
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	22.3		ng/L		87	70 - 130	24	30	
Perfluorononanoic acid (PFNA)	<2.0		25.1	26.0		ng/L		104	70 - 130	11	30	
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	19.5		ng/L		78	70 - 130	26	30	
Perfluorotridecanoic acid (PFTrDA)	<2.0		25.1	19.8		ng/L		79	70 - 130	21	30	
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	<2.0		23.4	21.3		ng/L		91	70 - 130	6	30	
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		23.7	21.1		ng/L		89	70 - 130	3	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0	F2	23.7	18.8	F2	ng/L		80	70 - 130	31	30	
Surrogate												
		MSD	MSD									
	%Recovery	Qualifier	Limits									
d5-NEtFOSAA	106		70 - 130									
13C2 PFHxA	101		70 - 130									
13C2 PFDA	110		70 - 130									
13C3-GenX	96		70 - 130									

QC Association Summary

Client: City & County of Honolulu
 Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

LCMS

Prep Batch: 49928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-56685-1	BWS2253-J1-AQ	Total/NA	Water	537.1 DW	
MBL 380-49928/23-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-49928/25-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 380-49928/26-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	
MRL 380-49928/24-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-56551-A-1-C MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-56551-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	
380-56551-A-1-B DU	Duplicate	Total/NA	Water	537.1 DW	

Prep Batch: 49990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-56685-2	BWS2253-J1-FB	Total/NA	Water	537.1 DW	
MBL 380-49990/17-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-49990/19-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 380-49990/20-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	
MRL 380-49990/18-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-56757-B-9-A MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-56757-C-9-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	

Analysis Batch: 50419

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-56685-1	BWS2253-J1-AQ	Total/NA	Water	537.1	49928
MBL 380-49928/23-A	Method Blank	Total/NA	Water	537.1	49928
MRL 380-49928/24-A	Lab Control Sample	Total/NA	Water	537.1	49928
380-56551-A-1-C MS	Matrix Spike	Total/NA	Water	537.1	49928
380-56551-A-1-D MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	49928
380-56551-A-1-B DU	Duplicate	Total/NA	Water	537.1	49928

Analysis Batch: 50424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-56685-2	BWS2253-J1-FB	Total/NA	Water	537.1	49990
MBL 380-49990/17-A	Method Blank	Total/NA	Water	537.1	49990
LCS 380-49990/19-A	Lab Control Sample	Total/NA	Water	537.1	49990
LCSD 380-49990/20-A	Lab Control Sample Dup	Total/NA	Water	537.1	49990
MRL 380-49990/18-A	Lab Control Sample	Total/NA	Water	537.1	49990
380-56757-B-9-A MS	Matrix Spike	Total/NA	Water	537.1	49990
380-56757-C-9-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	49990

Analysis Batch: 50570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 380-49928/25-A	Lab Control Sample	Total/NA	Water	537.1	49928
LCSD 380-49928/26-A	Lab Control Sample Dup	Total/NA	Water	537.1	49928

Lab Chronicle

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

Client Sample ID: BWS2253-J1-AQ

Lab Sample ID: 380-56685-1

Date Collected: 07/26/23 10:30

Matrix: Water

Date Received: 07/27/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			49928	US1B	EA POM	08/02/23 05:52
Total/NA	Analysis	537.1		1	50419	UKDT	EA POM	08/04/23 20:14

Client Sample ID: BWS2253-J1-FB

Lab Sample ID: 380-56685-2

Date Collected: 07/26/23 10:30

Matrix: Water

Date Received: 07/27/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	537.1 DW			49990	SL5Q	EA POM	08/02/23 10:55
Total/NA	Analysis	537.1		1	50424	UKDT	EA POM	08/05/23 04:53

Laboratory References:

EA POM = Eurofins Eaton Analytical Pomona, 941 Corporate Center Drive, Pomona, CA 91768-2642, TEL (626)386-1100



Accreditation/Certification Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

Laboratory: Eurofins Eaton Analytical Pomona

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

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-24

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

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

Method Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

Method	Method Description	Protocol	Laboratory
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA POM
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA POM

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA POM = Eurofins Eaton Analytical Pomona, 941 Corporate Center Drive, Pomona, CA 91768-2642, TEL (626)386-1100



Sample Summary

Client: City & County of Honolulu
Project/Site: HRS-340E - RED-HILL - INTERA

Job ID: 380-56685-1

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
380-56685-1	BWS2253-J1-AQ	Water	07/26/23 10:30	07/27/23 10:00
380-56685-2	BWS2253-J1-FB	Water	07/26/23 10:30	07/27/23 10:00

- 1
- 2
- 3
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- 5
- 6
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- 8
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- 11
- 12
- 13
- 14
- 15
- 16

Chain of Custody Record



Client Information		Lab PM Arada, Rachelle	Carrier Tracking No(s) FEDEX	COC No
Client Contact: Mr. Erwin Kawata		E-Mail: Rachelle.Arada@et.eurofins.com	State of Origin HAWAII	Page Page 1 of 1
City & County of Honolulu		RWSID	Job #	
Address 630 South Beretania Street Honolulu HI, 96843		Due Date Requested: TAT Requested (days): STANDARD	Analysis Requested	
Phone 808-748-5066(Tel)		Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Preservation Codes: M - Hexane A - HCL B - NaOH O - AsNaO2 C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Email ekawata@hbws.org		PO #: C20525101 exp 05312023	Special Instructions/Note: x = testing comes from another container.	
Project Name HRS-340E - RED-HILL - INTERA		WO #	Subcontract Notes: 625 PAH - Physis 8015 TPH D+M - EMAX 8015 Gas - EMAX PFAS 537.1 & 533 - EEA POM PFAS 1633 - EEA SAC Bill and Report to EEA - Pomona	
Site Site J		Project # 38002227	Total Number of containers	
Site #		SSOW#	Special Instructions/Note: x = testing comes from another container.	
Sample Identification		Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	
Sample ID	Sample Date	Sample Time	Sample Type (G=comp, G=grab)	Preservation Code
BWS2253-J1-AQ	7/26/23	1030	G	Water
BWS2253-J1-FB	7/26/23	1030	G	Water
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		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		
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements 6452 4637 7866		
Empty Kit Relinquished by		Date	Method of Shipment	
Relinquished by	Date/Time	Received by	Date/Time	Company
Relinquished by	7/26/23 1330	YWD	7/27/23 10:00	Company
Relinquished by		Received by		Company
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: ARADA 26-02-24 YIC		



Order Completion Information

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

Order Completion Information

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

Order Completion Information

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

Sets	Bottles/Set	Qty	Bottle Type Description	Preservative	Method	Matrix	Sample Type	Comments	Lot #
1	3	3	Plastic 250ml - Trizma	Trizma	537.1_DW_PREC - 537.1 Full List	Water	Normal		
1	3	3	Plastic 250ml - Ammonium Acetate	Ammonium Acetate	533 - All Analytes	Water	Normal		
1	1	1	Plastic 250ml - Reagent Water	None		Water	Field Blank		
1	1	1	Plastic 250ml - Ammonium Acetate	Ammonium Acetate		Water	Field Blank		
1	1	1	Plastic 250ml - Reagent Water	None		Water	Field Blank		
1	1	1	Plastic 250ml - Trizma	Trizma		Water	Field Blank		

Total Bottle Summary

Bottle Type Description

Plastic 250ml - Reagent Water
 Plastic 250ml - Trizma
 Plastic 250ml - Ammonium Acetate

Preservative

None
 Trizma
 Ammonium Acetate

Bottle Count

2
 4
 4
 Total Bottles: 10

Notes to Field Staff:



Scan QR code for field sampler instructions

Health and Safety Notes:

Preservative

Ammonium Acetate

Trizma

Comment

Caution! May cause eye, skin, and respiratory tract irritation. Avoid skin and eye contact. If contact is made, FLUSH IMMEDIATELY with water.

CAUTION! May cause eye, skin, and respiratory tract irritation

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

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



Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-56685-1

Login Number: 56685
List Number: 1
Creator: Elyas, Matthew

List Source: Eurofins Eaton Analytical Pomona

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	