BOARD OF WATER SUPPLY
KA 'OIHANA WAI
CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET • HONOLULU, HAWAI'I 96843
Phone: (808) 748-5000 • boardofwatersupply.com

RICK BLANGIARDI
MAYOR
MEIA

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MANAGER AND CHIEF ENGINEER
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ERWIN KAWATA
DEPUTY MANAGER
HOPE MANAKIA

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September 30, 2024

Martha Guzman
Regional Administrator
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105

and

Kenneth S. Fink, MD, MGA, MPH
Director of Health
Hawai'i State Department of Health
1250 Punchbowl Street
Honolulu, Hawai'i 96813

Dear Ms. Guzman and Dr. Fink:

Subject: Per- and Polyfluoroalkyl Substances (PFAS) Detected at Board of Water Supply Hālawa Shaft

Board of Water Supply (BWS) would like to inform the U.S. Environmental Protection Agency (EPA) and Hawai'i State Department of Health (DOH) (collectively referred to as the "Regulatory Agencies") that we have detected per- and polyfluoroalkyl substances (PFAS) at the BWS Hālawa Shaft using EPA Methods 533 and 537.1. The findings are summarized in the enclosed table.

BWS stopped pumping Hālawa Shaft on December 2, 2021, soon after the Red Hill Shaft contamination incident on November 20, 2021. In November 2022, the existing cable car used to transport staff and equipment up and down Hālawa Shaft's 300-foot incline suddenly became inoperable. Several attempts to restore cable car operations were unsuccessful. In the meantime, staff manually traversed the 300-foot incline to gather the samples collected on December 5, 2022. This effort however, proved unsafe to repeat for future sample collections. For this reason, no repeat samples could be collected to confirm the December 2022 detections. This condition remained until August 2024, when a temporary winch system was installed and a flat landing place was constructed to enable staff to safely resume sample collection. The test results for the samples collected in August 2024 and the subsequent samples collected thereafter appear comparable to the

single sample collected on December 5, 2022. No PFAS detections were observed in samples collected from Hālawa Shaft in 2020 and 2021.

The enclosed table shows BWS Hālawa Shaft test results of samples collected from December 2022 through August 27, 2024. During this period, the results show comparable detections of perfluorohexanesulfonic acid (PFHxS) and perfluorooctanesulfonic acid (PFOS).

The table also includes PFAS detections reported by the Navy in their Per- and Polyfluoroalkyl Substances Delineation Baseline Groundwater Wells Investigation Report dated November 27, 2023 (Navy, 2023). The Navy results show PFHxA and PFOS also detected in one monitoring well on the Red Hill facility property (RHP01) and one location away from the property (NMW32). The remaining monitoring wells show a variety of sparse PFAS detections.

We believe these PFAS results affirm the necessity of BWS' decision to shut down Hālawa Shaft in response to the November 2021 Joint Base Pearl Harbor-Hickam fuel contamination crisis. The PFAS detections at Hālawa Shaft may be related to historic PFAS detections in samples collected from the Navy's Red Hill Shaft, and/or the confirmed 1,300 gallons of aqueous film forming foam (AFFF) release at the Red Hill Fuel Facility on November 29, 2022 (Lau, 2023). We believe these results speak to our repeated requests to characterize and understand the impact of past releases on the groundwater aquifer underlying the Red Hill facility fully and expeditiously.

We urge the Regulatory Agencies to require the Navy to collect and test weekly samples from all Red Hill monitoring wells and drinking water sources for PFAS to expand the resolution of data being collected. The agencies should also require the Navy to expedite characterizing the nature and extent of all contamination in the aquifer, install additional monitor wells in areas of Hālawa Valley to the west and northwest of the Red Hill Bulk Fuel Facility, complete the numerical groundwater flow model (note that BWS has not been allowed to review draft reports and provide comments since 2020) and fate and transport study, and mitigate the contamination in both the aquifer and the vadose (unsaturated zone) below the bottoms of the 20 fuel tanks and above the aquifer's water table (about 80 to 100 feet vertically.

If there are any questions, please contact Erwin Kawata, Deputy Manager, at (808) 748-5066.

Very truly yours,

Ernest Y.W. Lau, P.E.
Manager and Chief Engineer

Enclosures

References

Lau, Ernest Y.W. 2023. Letter "The Navy's Lack of Transparency in Response to Recent PFAS Releases at the Red Hill Bulk Fuel Storage Facility, Honolulu, Hawai'i. Letter to the Honorable Lloyd J. Austin III, Secretary of Defense. January 10.

Naval Facilities Engineering Systems Command (Navy). 2023 Per- and Polyfluoroalkyl Substances Delineation Baseline Groundwater Wells Investigation Report, Joint Base Pearl Harbor-Hickam, O'ahu, Hawai'i. November 27, 2023

cc: Rear Admiral Stephen Barnett
Commander
Navy Region Hawai'i
850 Ticonderoga Street, Suite 110
Joint Base Pearl Harbor-Hickam, Hawai'i 96860

Kathleen Ho
Deputy Director
Environmental Health Administration
Hawai'i State Department of Health
1250 Punchbowl Street
Honolulu, Hawai'i 96813

Nā'ālehu Anthony
BWS Board Chair

Laboratory Test Results

All values in ng/L (ppt)

	BWS Halawa Shaft												Navy (1)(2)				
													RHP01	RHP01	RHP07	RHP08	NMW32
Sample date	8/27/2024		8/20/2024		8/6/2024		12/5/2022		4/13/2021		4/13/2020		9/12/2023	9/13/2023	9/14/2023	9/20/2023	9/18/2023
EEA Report no.	380-110890		380-109897		380-107748		380-30484		929317		865885		NA	NA	NA	NA	NA
EPA Method	533	537.1	533	537.1	533	537.1	533	537.1	533	537.1	533	537.1	1633	1633	1633	1633	1633
Analyte																	
Perfluorobutanesulfonic acid (PFBS)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.3	ND	ND	3.9
Perfluorobutanoic acid (PFBA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14.2	ND	ND	ND
Perfluoropentanoic acid (PFPeA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.5	12.3	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	3.7	3.6	3.5	4	3.2	4	4.2	3.9	ND	ND	NA	ND	4.9	5	ND	ND	9.7
Perfluorohexanoic acid (PFHxA)	ND	ND	ND	ND	ND	ND	2.1	ND	ND	ND	NA	ND	4.4	6.3	ND	ND	4.5
Perfluoroheptanoic acid (PFHpA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.9	5	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	3.4	3.4	3.3	3.6	3.3	3.8	4.9	3.2	ND	ND	NA	ND	13.2	16 J	9	3.9	14.7
Perfluorooctanoic acid (PFOA)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.9	5.8	ND	ND	ND

Halawa Shaft operations shut down on 12/2/21 in response to November 2021 JBPHH water contamination

Samples collected after 12/5/21 from water table under static pumping conditions

ND = Not detected

NA = Not available

1. Reference: Per-and Polyfluoroalkyl Substances Delineation Baseline Groundwater Wells Investigation Report, Naval Facilities Engineering Command Pacific, November 27, 2023

2. See Navy map for well locations

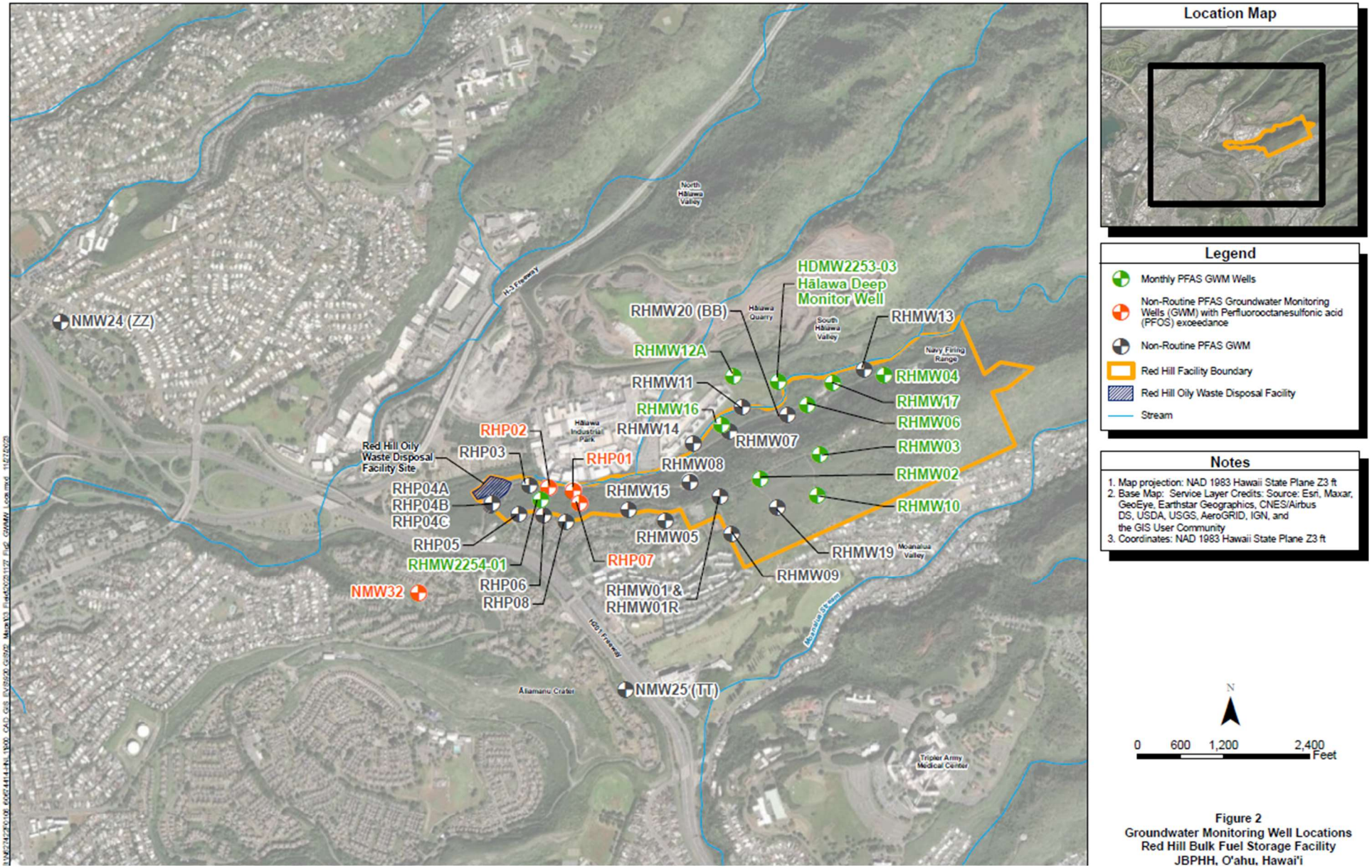

Figure 2
Groundwater Monitoring Well Locations
Red Hill Bulk Fuel Storage Facility
JBPHH, O'ahu, Hawai'i

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750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

Honolulu Board of Water Supply
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843
Attention: Erwin Kawata
Fax: 808-550-5018

Date of Issue
05/08/2020

EUROFINS EATON
ANALYTICAL, LLC

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

DEB: Debbie L Frank
Project Manager

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

* Effective May 4, 2020 EEAM Lab is A2LA accredited for ISO/IEC 17025:2017.
* Accredited in accordance with **TNI 2016 and ISO/IEC 17025:2017**.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	Montana	Cert 0035
Arizona	AZ0778	Nebraska	Certified
Arkansas	Certified	Nevada	CA000062018
California	2813	New Hampshire *	2959
Colorado	Certified	New Jersey *	CA 008
Connecticut	PH-0107	New Mexico	Certified
Delaware	CA 006	New York *	11320
Florida *	E871024	North Carolina	06701
Georgia	947	North Dakota	R-009
Guam	18-005R	Oregon *	CA200003-005
Hawaii	Certified	Pennsylvania *	68-565
Idaho	Certified	Puerto Rico	Certified
Illinois *	200033	Rhode Island	LAO00326
Indiana	C-CA-01	South Carolina	87016
Iowa - Asbestos	413	South Dakota	Certified
Kansas *	E-10268	Tennessee	TN02839
Kentucky	90107	Texas *	T104704230-18-15
Louisiana *	LA180000	Utah (Primary AB) *	CA00006
Maine	CA0006	Vermont	VT0114
Maryland	224	Virginia *	460260
Commonwealth of Northern Marianas Is.	MP0004	Washington	C838
Massachusetts	M-CA006	EPA Region 5	Certified
Michigan	9906	Los Angeles County Sanitation Districts	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, LLC
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Monrovia, CA 91016-3629
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F | 866-988-3757
www.EurofinsUS.com/Eaton

The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **Honolulu Board of Water Supply**
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Attn: Erwin Kawata
Phone: 808-748-5091

Client ID: HONOLULU
Folder #: 865885
Project: SPECIAL
Sample Group: Special Met/Cr6-218.7/DBP/537.1

Project Manager: Debbie L Frank
Phone: (626) 386-1149
PO #: C17525101 exp 021320

The following samples were received from you on **April 15, 2020** at **1700**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202004150421	HALAWA SHAFT (331-241-TP401)	04/13/2020 0930
	@ICP, @ICPMS, Mercury ICPMS, @UCMR3 200.8, Aluminum Total ICAP/MS, Chlorate by IC, Hexavalent Chromium, Zinc Total ICAP/MS	
202004150425	Travel Blank: HALAWA SHAFT (331-241-TP401)	04/13/2020 0930
	No Test	
202005010092	HALAWA SHAFT (331-241-TP401)	04/29/2020 0845
	@537.1	
202005010093	HALAWA SHAFT (331-241-TP401) FB ANALYZE	04/29/2020 0845
	@537.1 FB ANALYZE	

Test Description

@ICP -- ICP Metals

@ICPMS -- ICPMS Metals

@537.1 -- EPA Method 537.1

@537.1 FB ANALYZE -- EPA Method 537.1

@UCMR3 200.8 -- UCMR3 Metals

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750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

Phone: 626 386 1100
Fax: 626 386 1101

800 566 LABS (800 566 5227)

CHAIN OF CUSTODY RECORD

865885

EUROFINS EATON ANALYTICAL USE ONLY:

LOGIN COMMENTS: _____

SAMPLES CHECKED AGAINST COC BY: FC

SAMPLES LOGGED IN BY: LD

SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

SAMPLE TEMP RECEIVED AT:

☐ Colton / No. California / Arizona _____ °C (Compliance: 4 ± 2 °C)

☒ Monrovia 4.3 °C (Compliance: 4 ± 2 °C)

CONDITION OF BLUE ICE: Frozen 0 Partially Frozen _____ Thawed _____ Wet Ice _____ No Ice _____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: _____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME:	PROJECT CODE:	COMPLIANCE SAMPLES (check for yes) ☐	NON-COMPLIANCE SAMPLES (check for yes) ☒
BWS HONOLULU	Special	- Requires state forms ☐	REGULATION INVOLVED:
		Type of samples (circle one): ROUTINE SPECIAL CONFIRMATION (eg. SDWA, Phase V, NPDES, FDA,...)	

EEA CLIENT CODE:	COC ID:	SAMPLE GROUP:	*SEE ATTACHED BOTTLE ORDER FOR ANALYSES* ☐ (check for yes), *OR* list ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)
Honolulu			

TAT requested: rush by adv notice only STD X 1 wk ___ 3 day ___ 2 day ___ 1 day ___

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	FIELD DATA	FIELD DATA	Inorganic Metals	UCMR3 Metals	Hexavalent Chromium	Chlorate by 300.0	Aluminum	Zinc									SAMPLER COMMENTS
4/13/20	0930	HALAWA SHAFT	HI0000331-241	CFW			x	x	x	x	x	x									
		Temperature Blank																			Temp Blank: 0.0 °C

* **MATRIX TYPES:** **RSW** = Raw Surface Water; **RGW** = Raw Ground Water; **CFW** = Chlor(am)inated Finished Water; **FW** = Other Finished Water; **SEAW** = Sea Water; **WW** = Waste Water; **BW** = Bottled Water; **SW** = Storm Water; **SO** = Soil; **SL** = Sludge; **O** = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:	[redacted]	Derek Dotson	Honolulu Board of Water Supply	4/13/2020	
RELINQUISHED BY:		Derek Dotson	Honolulu Board of Water Supply	4/14/2020	1200
RECEIVED BY:					
RELINQUISHED BY:					
RECEIVED BY:	J	fidel chavez	EEA	4-15-20	1706

PAGE 1 OF 1

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INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 865885

SAMPLE TEMP RECEIVED:

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

SAMPLES REC'D DAY OF COLLECTION? Yes / No

IR Gun ID = 6301 (Observation= 5.0 °C) (Corr.Factor 0.2 °C) (Final = 4.8 °C)

TYPE OF ICE: Real ____ Synthetic ✓ No Ice ____ CONDITION OF ICE: Frozen ✓ Partially Frozen ____ Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

Compliance Acceptance Criteria:

1) **Chemistry:** >0, ≤ 6°C, not frozen (NELAP) (if received after 24 hrs of sample collection)

2) **Microbiology, Distribution:** < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) **Microbiology, Surface Water:** < 10°C (if received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4) **Dioxin (1613 or 2,3,7,8 TCDD):** must be between 0-4 °C, not frozen (if received after 24 hrs of sample collection)

5) **pH Check.** Manufacturer: ____ Lot Number: ____ pH strip type: 0 - 14 or ____ Expiration Date ____ Results: ____

6) **Chlorine check.** Manufacturer: Sansafe. Lot No.: ____ Expiration Date: ____ Results ____

7) VOA Headspace: No Samples with Headspace: ☐ Samples with Headspace (see below): ☐

Headspace Documentation (use additional VOC Internal COFC for additional bottles)

Exempt from headspace concerns: Methods 515.4, HAA(6251,552), 505, SPME, @CH, 532LCMS, 556, 536, Anatoxin, LCMS methods using 40 ml vials, International clients:

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Note Sample IDs which have dissimilar headspace (i.e. potential sampling errors): ____

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:		FIDELCHAVEZ	Eurofins Eaton Analytical	4-15-20	11:19

eurofins | Eaton Analytical

CHAIN OF CUSTODY RECORD

865885

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

Phone: 626 386 1100
Fax: 626 386 1101

800 566 LABS (800 566 5227)

EUROFINS EATON ANALYTICAL USE ONLY:

LOGIN COMMENTS: _____

SAMPLES CHECKED AGAINST COC BY: CB

SAMPLES LOGGED IN BY: C

SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

SAMPLE TEMP RECEIVED AT:

☐ Colton / No. California / Arizona _____ °C (Compliance: 4 ± 2 °C)

☒ Monrovia 4.6 °C (Compliance: 4 ± 2 °C)

CONDITION OF BLUE ICE: Frozen X Partially Frozen _____ Thawed _____ Wet Ice _____ No Ice _____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: _____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME:	PROJECT CODE:	COMPLIANCE SAMPLES (check for yes) ☐	NON-COMPLIANCE SAMPLES (check for yes) ☒
BWS HONOLULU	Special	- Requires state forms ☐	REGULATION INVOLVED:
EEA CLIENT CODE: Honolulu / COC ID:	SAMPLE GROUP:	Type of samples (circle one): ROUTINE SPECIAL CONFIRMATION (eg. SDWA, Phase V, NPDES, FDA,...)	
TAT requested: rush by adv notice only — STD X 1 wk ___ 3 day ___ 2 day ___ 1 day ___		*SEE ATTACHED BOTTLE ORDER FOR ANALYSES* ☒ (check for yes), *OR*	
		list ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)	

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	FIELD DATA	FIELD DATA	Q22020	SAMPLER COMMENTS
4/29/20	0845	HALAWA SHAFT	HI0000331-241	CFW			x	Folder #865885
		Temperature Blank						Temp Blank: 0.5 °C

*** MATRIX TYPES:** **RSW** = Raw Surface Water; **RGW** = Raw Ground Water; **CFW** = Chlor(am)inated Finished Water; **FW** = Other Finished Water; **SEAW** = Sea Water; **WW** = Waste Water; **BW** = Bottled Water; **SW** = Storm Water; **SO** = Soil; **SL** = Sludge; **O** = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:	[redacted]	Derek Dotson	Honolulu Board of Water Supply	4/29/2020	
RELINQUISHED BY:		Derek Dotson	Honolulu Board of Water Supply	4/30/2020	1200
RECEIVED BY:	Chuck Brock	Chuck Brock	EEA	5.1.20	1045
RELINQUISHED BY:					
RECEIVED BY:					

PAGE 1 OF 1

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Kit Order for Honolulu Board of Water Supply

Debbie L Frank is your Eurofins Eaton Analytical, LLC Service Manager

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
(626) 386-1100 FAX (866) 988-3757

Created Date & Time: 4/17/2020 6:04:54PM

Note: Sampler Please return this paper with your samples

Kit #: 261966

Client ID: HONOLULU

Created By: Debbie L Frank - [DEB]
Deliver By: 04/24/2020
STG: Bottle Orders
Ice Type: G

Project Code: SPECIAL Bottle Orders
Group Name: Special Met/Cr6-218.7/DBP/537.1
PO#/JOB#: C17525101 exp 021320
Description: Resample 537.1 HALAWA SHAFT

Ship Sample Kits to
Honolulu Board of Water Supply
630 South Beretania Street
Chemistry Lab
Honolulu, HI 96843

Attn: Ron Fenstemacher
Phone: 808-748-5841
Fax: 808-550-5572

Send Report to
Honolulu Board of Water Supply
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Attn: Erwin Kawata
Phone: 808-748-5091
Fax: 808-550-5018

Billing Address
Honolulu Board of Water Supply
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Attn: Erwin Kawata
Phone: 808-748-5091
Fax: 808-550-5018

# of Sample	Tests	Bottle Qty - Type [preservative information]	Total	UN DOT #
1	@537.1	2 - 275 ml polypro w polypro cap [1.4 g Trisma]	2	
1	@537.1 TB EMPTY	1 - 275 ml polypro w polypro cap [1.4g Trisma + H2O]	1	
1	@537.1 FB ANALYZE	1 - 275 ml polypro w polypro cap [no preservative]	1	

Sum Tests: 3

Sum Bottles: 4

Comments

HALAWA SHAFT Field sample and Fiedl Blank (FB) needs resample for 537.1. FB did not meet preservation criteria.

Order	Sample ID	Folder
202004150421	HALAWA SHAFT (331-241-TP401)	865885

Request addition to 865885

Sampler:
537.1 Field Blank (FB) for PFAS monitoring
At each site - Transfer the DI from the @537.1 TB container into the empty @537.1 FB container associated with that site. @537.1 FB Analyze will be your final sample. Please list this sample on a separate line item on the COC as FB::_____

Code	Status	Date Shipped	Via	Tracking #	# of Coolers	Prepared By

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INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 868885

SAMPLE TEMP RECEIVED:

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

SAMPLES REC'D DAY OF COLLECTION? Yes / No

IR Gun ID = 616A (Observation= 4.8 °C) (Corr.Factor -0.2 °C) (Final = 4.6 °C) CB

TYPE OF ICE: Real ____ Synthetic X No Ice ____ CONDITION OF ICE: Frozen X Partially Frozen ____ Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

Compliance Acceptance Criteria: 770361754851

1) Chemistry: >0, ≤ 6°C, not frozen (NELAP) (if received after 24 hrs of sample collection)

2) Microbiology, Distribution: < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) Microbiology, Surface Water: < 10°C (if received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4 Dioxin (1613 or 2,3,7,8 TCDD): must be between 0-4 °C, not frozen (if received after 24 hrs of sample collection)

5) pH Check. Manufacturer: ____ Lot Number: ____ pH strip type: 0 - 14 or ____ Expiration Date ____ Results: ____

6) Chlorine check. Manufacturer: Sansafe. Lot No.: ____ Expiration Date: ____ Results ____

7) VOA Headspace: No Samples with Headspace: ☐ Samples with Headspace (see below): ☐

Headspace Documentation (use additional VOC Internal COFC for additional bottles)

Exempt from headspace concerns: Methods 515.4, HAA(6251,552), 505, SPME, @CH, 532LCMS, 556, 536, Anatoxin, LCMS methods using 40 ml vials, International clients:

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Note Sample IDs which have dissimilar headspace (i.e. potential sampling errors): ____

RECEIVED BY: SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
Chuck Brooks	Chuck Brooks	Eurofins Eaton Analytical	5.1.20	1045

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Comments

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Folder Comments

COC note: (@537.1 PFAS (N1))
Travel Blank(TB) and Field Blank (FB) are submitted, not noted on the COC.
The Field blank (FB) did not pass preservation check. Travel Blank does not meet PFAS Monitoring requirement for FB. Client will resample, per Owen Narikawa 04/17/20. deb 041720
See 202005010092

Flags Legend:

LK - The associated blank spike recovery was above method acceptance limits. This target analyte was not detected in the sample.
M3 - The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The associated blank spike recovery was acceptable.

The Comments Report may be blank if there are no comments for this report.

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Laboratory Hits

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/15/2020 1700

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202004150421	**HALAWA SHAFT (331-241-TP401)**				
04/22/2020 14:16	Barium Total ICAP/MS		16	2000	ug/L	2.0
04/24/2020 15:15	Chlorate by IC		30		ug/L	10
04/28/2020 21:07	Chromium		1.3	100	ug/L	0.20
04/22/2020 14:16	Chromium Total ICAP/MS		2.0	100	ug/L	1.0
04/22/2020 14:16	Copper Total ICAP/MS		5.1	1300	ug/L	2.0
04/19/2020 13:14	Hexavalent Chromium		1.8		ug/L	0.020
04/16/2020 12:38	Sodium Total ICAP		42		mg/L	1.0
04/28/2020 21:07	Strontium		210		ug/L	0.30
04/28/2020 21:07	Vanadium		7.4		ug/L	0.20

SUMMARY OF POSITIVE DATA ONLY

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Laboratory Data

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/15/2020 1700

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
HALAWA SHAFT (331-241-TP401) (202004150421)							**Sampled on 04/13/2020 0930**		
		EPA 200.8 - ICPMS Metals							
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Aluminum Total ICAP/MS	ND	ug/L	20	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Antimony Total ICAP/MS	ND	ug/L	1.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Arsenic Total ICAP/MS	ND	ug/L	1.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Barium Total ICAP/MS	16	ug/L	2.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Beryllium Total ICAP/MS	ND	ug/L	1.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Cadmium Total ICAP/MS	ND	ug/L	0.50	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Chromium Total ICAP/MS	2.0	ug/L	1.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Copper Total ICAP/MS	5.1	ug/L	2.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Lead Total ICAP/MS	ND	ug/L	0.50	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Nickel Total ICAP/MS	ND	ug/L	5.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Selenium Total ICAP/MS	ND	ug/L	5.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Thallium Total ICAP/MS	ND	ug/L	1.0	1
04/16/20	04/22/20 14:16	1242012	1243359	(EPA 200.8)	Zinc Total ICAP/MS	ND	ug/L	20	1
		EPA 200.7 - ICP Metals							
04/16/20	04/16/20 12:38	1242012	1242071	(EPA 200.7)	Sodium Total ICAP	42	mg/L	1.0	1
		UCMR 200.8 - UCMR3 Metals							
	04/28/20 21:07	1243760	1245326	(UCMR 200.8)	Chromium	1.3 (M3)	ug/L	0.20	1
	04/28/20 21:07	1243760	1245326	(UCMR 200.8)	Cobalt	ND	ug/L	1.0	1
	04/28/20 21:07	1243760	1245326	(UCMR 200.8)	Molybdenum	ND	ug/L	1.0	1
	04/28/20 21:07	1243760	1245326	(UCMR 200.8)	Strontium	210 (M3)	ug/L	0.30	1
	04/28/20 21:07	1243760	1245326	(UCMR 200.8)	Vanadium	7.4 (M3)	ug/L	0.20	1
	04/28/20 21:07	1243760	1245326	(UCMR 200.8)	Indium (115)	91	%		1
	04/28/20 21:07	1243760	1245326	(UCMR 200.8)	Scandium (45)	110	%		1
		EPA 200.8 - Mercury ICPMS							
04/16/20	04/22/20 14:16	1242012	1243357	(EPA 200.8)	Mercury ICPMS	ND	ug/L	0.20	1
		EPA 300.0 - Disinfection ByProducts by 300.0							
	04/24/20 15:15		1244017	(EPA 300.0)	Chlorate by IC	30	ug/L	10	1
		EPA 218.7 - Hexavalent Chromium							
	04/19/20 13:14	1241853	1242217	(EPA 218.7)	Hexavalent Chromium	1.8	ug/L	0.020	1
Travel Blank: HALAWA SHAFT (331-241-TP401) (202004150425)							**Sampled on 04/13/2020 0930**		
		Default - No Test							
	05/04/20 08:00		1243307	(Default)	No Test	NA			1
HALAWA SHAFT (331-241-TP401) (202005010092)							**Sampled on 04/29/2020 0845**		

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/15/2020 1700

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
			EPA 537.1 - EPA Method 537.1						
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	ug/L	0.0050	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorobutanesulfonic acid (PFBS)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorodecanoic acid (PFDA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorododecanoic acid (PFDoA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluoroheptanoic acid (PFHpA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorohexanesulfonic acid (PFHxS)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorohexanoic acid (PFHxA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorononanoic acid (PFNA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorooctanesulfonic acid (PFOS)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorooctanoic acid (PFOA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorotetradecanoic acid (PFTA)	ND (LK)	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluorotridecanoic acid (PFTrDA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	Perfluoroundecanoic acid (PFUnA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	13C2-PFDA	105	%		1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	13C2-PFHxA	107	%		1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	13C2-PFOA– IS#1	97	%		1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	13C3-HFPO-DA	96	%		1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	13C4-PFOS– IS#2	103	%		1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	d3-NMeFOSAA	108	%		1
05/03/20	05/05/20 00:17	1246050	1246346	(EPA 537.1)	d5-NEtFOSAA	99	%		1
HALAWA SHAFT (331-241-TP401) FB ANALYZE (202005010093)							**Sampled on 04/29/2020 0845**		
			EPA 537.1 - EPA Method 537.1						
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	ug/L	0.0020	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/15/2020 1700

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	ug/L	0.0050	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorobutanesulfonic acid (PFBS)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorodecanoic acid (PFDA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorododecanoic acid (PFDoA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluoroheptanoic acid (PFHpA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorohexanesulfonic acid (PFHxS)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorohexanoic acid (PFHxA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorononanoic acid (PFNA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorooctanesulfonic acid (PFOS)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorooctanoic acid (PFOA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorotetradecanoic acid (PFTA)	ND (LK)	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluorotridecanoic acid (PFTrDA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	Perfluoroundecanoic acid (PFUnA)	ND	ug/L	0.0020	1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	13C2-PFDA	107	%		1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	13C2-PFHxA	98	%		1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	13C2-PFOA– IS#1	99	%		1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	13C3-HFPO-DA	88	%		1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	13C4-PFOS– IS#2	100	%		1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	d3-NMeFOSAA	108	%		1
05/03/20	05/05/20 00:27	1246050	1246346	(EPA 537.1)	d5-NEtFOSAA	97	%		1

Rounding on totals after summation.
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Laboratory QC Summary

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

ICP Metals

Prep Batch: 1242012 **Analytical Batch: 1242071** **Analysis Date: 04/16/2020**

202004150421	HALAWA SHAFT (331-241-TP401)	Analyzed by: NINA

Hexavalent Chromium

Prep Batch: 1241853 **Analytical Batch: 1242217** **Analysis Date: 04/19/2020**

202004150421	HALAWA SHAFT (331-241-TP401)	Analyzed by: TLH

No Test

Analytical Batch: 1243307 **Analysis Date: 05/04/2020**

202004150425	Travel Blank: HALAWA SHAFT (331-241-TP401)	Analyzed by: ZR4B

Mercury ICPMS

Prep Batch: 1242012 **Analytical Batch: 1243357** **Analysis Date: 04/22/2020**

202004150421	HALAWA SHAFT (331-241-TP401)	Analyzed by: LUPE

ICPMS Metals

Prep Batch: 1242012 **Analytical Batch: 1243359** **Analysis Date: 04/22/2020**

202004150421	HALAWA SHAFT (331-241-TP401)	Analyzed by: LUPE

Disinfection ByProducts by 300.0

Analytical Batch: 1244017 **Analysis Date: 04/24/2020**

202004150421	HALAWA SHAFT (331-241-TP401)	Analyzed by: NJR

UCMR3 Metals

Prep Batch: 1243760 **Analytical Batch: 1245326** **Analysis Date: 04/28/2020**

202004150421	HALAWA SHAFT (331-241-TP401)	Analyzed by: AZS

EPA Method 537.1

Prep Batch: 1246050 **Analytical Batch: 1246346** **Analysis Date: 05/05/2020**

202005010092	HALAWA SHAFT (331-241-TP401)	Analyzed by: KAM
202005010093	HALAWA SHAFT (331-241-TP401) FB ANALYZE	Analyzed by: KAM

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Laboratory QC

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
ICP Metals by EPA 200.7									
Analytical Batch: 1242071						**Analysis Date: 04/16/2020**			
LCS1	Sodium Total ICAP		50	49.3	mg/L	99	(85-115)		
LCS2	Sodium Total ICAP		50	49.7	mg/L	99	(85-115)	20	0.81
MBLK	Sodium Total ICAP			0 5	mg/L				
MRL_CHK	Sodium Total ICAP		1	0.732	mg/L	73	(50-150)		
MS_202004150468	Sodium Total ICAP	140	50	179	mg/L	85	(70-130)		
MS2_202004150400	Sodium Total ICAP	24	50	73.4	mg/L	98	(70-130)		
MSD_202004150468	Sodium Total ICAP	140	50	179	mg/L	84	(70-130)	20	0.11
MSD2_202004150400	Sodium Total ICAP	24	50	72.8	mg/L	97	(70-130)	20	0.76
Hexavalent Chromium by EPA 218.7									
Analytical Batch: 1242217						**Analysis Date: 04/19/2020**			
LCS1	Hexavalent Chromium		2	1.99	ug/L	99	(90-110)		
LCS2	Hexavalent Chromium		2	2.00	ug/L	100	(90-110)	20	0.50
MBLK	Hexavalent Chromium			<0.007	ug/L				
MRL_CHK	Hexavalent Chromium		0.02	0.0186	ug/L	93	(50-150)		
MS_202004150298	Hexavalent Chromium	0.91	2	2.96	ug/L	103	(90-110)		
MS_202004150421	Hexavalent Chromium	1.8	2	3.88	ug/L	103	(90-110)		
MSD_202004150298	Hexavalent Chromium	0.91	2	2.98	ug/L	104	(90-110)	20	0.77
MSD_202004150421	Hexavalent Chromium	1.8	2	3.89	ug/L	104	(90-110)	20	0.35
EPA Method 537.1 by EPA 537.1									
Prep Batch: 1242161 Analytical Batch: 1242943						**Analysis Date: 04/17/2020**			
LCS3	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.047	0.0552	ug/L	117	(70-130)		
LCS4	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.047	0.0533	ug/L	113	(70-130)	30	3.5
MBLK	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid			<0.000667	ug/L				
MRL_CHK	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.0019	0.00210	ug/L	111	(50-150)		
MS1_202004140649	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	0.024	0.0272	ug/L	115	(70-130)		
MSD1_202004140649	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	0.024	0.0288	ug/L	122	(70-130)	30	5.9
LCS3	13C2-PFDA (S)		100	104	%	104	(70-130)		
LCS4	13C2-PFDA (S)		100	106	%	107	(70-130)		
MBLK	13C2-PFDA (S)			112	%	112	(70-130)		
MRL_CHK	13C2-PFDA (S)		100	106	%	106	(70-130)		
MS1_202004140649	13C2-PFDA (S)		100	105	%	105	(70-130)		
MSD1_202004140649	13C2-PFDA (S)		100	102	%	102	(70-130)		
LCS3	13C2-PFHxA (S)		100	111	%	111	(70-130)		
LCS4	13C2-PFHxA (S)		100	110	%	110	(70-130)		

Spike recovery is already corrected for native results.
Spike which e ceed Limit and Method Blank with po itive re ult are highlighted by Underlining
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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Laboratory QC

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MBLK	13C2-PFHxA (S)			114	%	114	(70-130)		
MRL_CHK	13C2-PFHxA (S)		100	113	%	113	(70-130)		
MS1_202004140649	13C2-PFHxA (S)		100	107	%	107	(70-130)		
MSD1_202004140649	13C2-PFHxA (S)		100	110	%	110	(70-130)		
LCS3	13C2-PFOA– IS#1 (I)		100	107	%	107	(50-150)		
LCS4	13C2-PFOA– IS#1 (I)		100	107	%	107	(50-150)		
MBLK	13C2-PFOA– IS#1 (I)			109	%	109	(50-150)		
MRL_CHK	13C2-PFOA– IS#1 (I)		100	109	%	109	(50-150)		
MS1_202004140649	13C2-PFOA– IS#1 (I)		100	111	%	111	(50-150)		
MSD1_202004140649	13C2-PFOA– IS#1 (I)		100	113	%	113	(50-150)		
LCS3	13C3-HFPO-DA (S)		100	102	%	102	(70-130)		
LCS4	13C3-HFPO-DA (S)		100	104	%	104	(70-130)		
MBLK	13C3-HFPO-DA (S)			107	%	107	(70-130)		
MRL_CHK	13C3-HFPO-DA (S)		100	102	%	102	(70-130)		
MS1_202004140649	13C3-HFPO-DA (S)		100	97.6	%	98	(70-130)		
MSD1_202004140649	13C3-HFPO-DA (S)		100	98.1	%	98	(70-130)		
LCS3	13C4-PFOS– IS#2 (I)		100	105	%	105	(50-150)		
LCS4	13C4-PFOS– IS#2 (I)		100	109	%	109	(50-150)		
MBLK	13C4-PFOS– IS#2 (I)			107	%	107	(50-150)		
MRL_CHK	13C4-PFOS– IS#2 (I)		100	106	%	106	(50-150)		
MS1_202004140649	13C4-PFOS– IS#2 (I)		100	107	%	107	(50-150)		
MSD1_202004140649	13C4-PFOS– IS#2 (I)		100	105	%	105	(50-150)		
LCS3	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.049	0.0492	ug/L	101	(70-130)		
LCS4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.049	0.0505	ug/L	104	(70-130)	30	2.6
MBLK	4,8-dioxa-3H-perfluorononanoic acid (ADONA)			<0.000667	ug/L				
MRL_CHK	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.0019	0.00204	ug/L	108	(50-150)		
MS1_202004140649	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.024	0.0246	ug/L	104	(70-130)		
MSD1_202004140649	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.024	0.0248	ug/L	105	(70-130)	30	0.63
LCS3	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.047	0.0510	ug/L	109	(70-130)		
LCS4	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.047	0.0483	ug/L	104	(70-130)	30	5.4
MBLK	9-chlorohexadecafluoro-3-oxanone-sulfonic acid			<0.000667	ug/L				
MRL_CHK	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.0019	0.00197	ug/L	106	(50-150)		
MS1_202004140649	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	0.023	0.0252	ug/L	108	(70-130)		
MSD1_202004140649	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	0.023	0.0255	ug/L	109	(70-130)	30	1.4
LCS3	d3-NMeFOSAA (I)		100	113	%	113	(50-150)		
LCS4	d3-NMeFOSAA (I)		100	114	%	114	(50-150)		
MBLK	d3-NMeFOSAA (I)			113	%	113	(50-150)		
MRL_CHK	d3-NMeFOSAA (I)		100	115	%	115	(50-150)		

Spike recovery is already corrected for native results.
Spike which e ceed Limit and Method Blank with po itive re ult are highlighted by Underlining
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MS1_202004140649	d3-NMeFOSAA (I)		100	114	%	114	(50-150)		
MSD1_202004140649	d3-NMeFOSAA (I)		100	116	%	116	(50-150)		
LCS3	d5-NEtFOSAA (S)		100	96.9	%	97	(70-130)		
LCS4	d5-NEtFOSAA (S)		100	97.9	%	98	(70-130)		
MBLK	d5-NEtFOSAA (S)			102	%	103	(70-130)		
MRL_CHK	d5-NEtFOSAA (S)		100	103	%	103	(70-130)		
MS1_202004140649	d5-NEtFOSAA (S)		100	97.0	%	97	(70-130)		
MSD1_202004140649	d5-NEtFOSAA (S)		100	99.8	%	100	(70-130)		
LCS3	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.05	0.0507	ug/L	101	(70-130)		
LCS4	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.05	0.0529	ug/L	106	(70-130)	30	4.3
MBLK	Hexafluoropropylene oxide dimer acid (HFPO-DA)			<0.001667	ug/L				
MRL_CHK	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.002	0.00205	ug/L	102	(50-150)		
MS1_202004140649	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.025	0.0248	ug/L	99	(70-130)		
MSD1_202004140649	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.025	0.0256	ug/L	102	(70-130)	30	3.2
LCS3	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.05	0.0505	ug/L	101	(70-130)		
LCS4	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.05	0.0507	ug/L	101	(70-130)	30	0.40
MBLK	N-ethyl Perfluorooctanesulfonamidoacetic acid			<0.000667	ug/L				
MRL_CHK	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.002	0.00204	ug/L	102	(50-150)		
MS1_202004140649	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	0.025	0.0257	ug/L	103	(70-130)		
MSD1_202004140649	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	0.025	0.0265	ug/L	106	(70-130)	30	3.1
LCS3	N-methyl Perfluorooctanesulfonamidoacetic acid		0.05	0.0487	ug/L	97	(70-130)		
LCS4	N-methyl Perfluorooctanesulfonamidoacetic acid		0.05	0.0479	ug/L	96	(70-130)	30	1.7
MBLK	N-methyl Perfluorooctanesulfonamidoacetic acid			<0.000667	ug/L				
MRL_CHK	N-methyl Perfluorooctanesulfonamidoacetic acid		0.002	0.00196	ug/L	98	(50-150)		
MS1_202004140649	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	0.025	0.0241	ug/L	96	(70-130)		
MSD1_202004140649	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	0.025	0.0254	ug/L	102	(70-130)	30	5.3
LCS3	Perfluorobutanesulfonic acid (PFBS)		0.044	0.0474	ug/L	107	(70-130)		
LCS4	Perfluorobutanesulfonic acid (PFBS)		0.044	0.0449	ug/L	102	(70-130)	30	5.4
MBLK	Perfluorobutanesulfonic acid (PFBS)			<0.000667	ug/L				
MRL_CHK	Perfluorobutanesulfonic acid (PFBS)		0.0018	0.00188	ug/L	106	(50-150)		
MS1_202004140649	Perfluorobutanesulfonic acid (PFBS)	ND	0.022	0.0237	ug/L	107	(70-130)		
MSD1_202004140649	Perfluorobutanesulfonic acid (PFBS)	ND	0.022	0.0236	ug/L	107	(70-130)	30	0.46
LCS3	Perfluorodecanoic acid (PFDA)		0.05	0.0530	ug/L	106	(70-130)		
LCS4	Perfluorodecanoic acid (PFDA)		0.05	0.0530	ug/L	106	(70-130)	30	0.0
MBLK	Perfluorodecanoic acid (PFDA)			<0.000667	ug/L				
MRL_CHK	Perfluorodecanoic acid (PFDA)		0.002	0.00214	ug/L	107	(50-150)		
MS1_202004140649	Perfluorodecanoic acid (PFDA)	ND	0.025	0.0263	ug/L	105	(70-130)		
MSD1_202004140649	Perfluorodecanoic acid (PFDA)	ND	0.025	0.0269	ug/L	107	(70-130)	30	2.3

Spike recovery is already corrected for native results.
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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS3	Perfluorododecanoic acid (PFDoA)		0.05	0.0517	ug/L	103	(70-130)		
LCS4	Perfluorododecanoic acid (PFDoA)		0.05	0.0533	ug/L	107	(70-130)	30	3.0
MBLK	Perfluorododecanoic acid (PFDoA)			<0.000667	ug/L				
MRL_CHK	Perfluorododecanoic acid (PFDoA)		0.002	0.00216	ug/L	108	(50-150)		
MS1_202004140649	Perfluorododecanoic acid (PFDoA)	ND	0.025	0.0269	ug/L	108	(70-130)		
MSD1_202004140649	Perfluorododecanoic acid (PFDoA)	ND	0.025	0.0270	ug/L	108	(70-130)	30	0.30
LCS3	Perfluoroheptanoic acid (PFHpA)		0.05	0.0561	ug/L	112	(70-130)		
LCS4	Perfluoroheptanoic acid (PFHpA)		0.05	0.0562	ug/L	112	(70-130)	30	0.18
MBLK	Perfluoroheptanoic acid (PFHpA)			<0.000667	ug/L				
MRL_CHK	Perfluoroheptanoic acid (PFHpA)		0.002	0.00225	ug/L	113	(50-150)		
MS1_202004140649	Perfluoroheptanoic acid (PFHpA)	ND	0.025	0.0279	ug/L	112	(70-130)		
MSD1_202004140649	Perfluoroheptanoic acid (PFHpA)	ND	0.025	0.0286	ug/L	114	(70-130)	30	2.5
LCS3	Perfluorohexanesulfonic acid (PFHxS)		0.046	0.0507	ug/L	111	(70-130)		
LCS4	Perfluorohexanesulfonic acid (PFHxS)		0.046	0.0493	ug/L	108	(70-130)	30	2.8
MBLK	Perfluorohexanesulfonic acid (PFHxS)			<0.000667	ug/L				
MRL_CHK	Perfluorohexanesulfonic acid (PFHxS)		0.0018	0.00192	ug/L	106	(50-150)		
MS1_202004140649	Perfluorohexanesulfonic acid (PFHxS)	ND	0.023	0.0253	ug/L	111	(70-130)		
MSD1_202004140649	Perfluorohexanesulfonic acid (PFHxS)	ND	0.023	0.0258	ug/L	113	(70-130)	30	2.0
LCS3	Perfluorohexanoic acid (PFHxA)		0.05	0.0534	ug/L	107	(70-130)		
LCS4	Perfluorohexanoic acid (PFHxA)		0.05	0.0536	ug/L	107	(70-130)	30	0.56
MBLK	Perfluorohexanoic acid (PFHxA)			<0.000667	ug/L				
MRL_CHK	Perfluorohexanoic acid (PFHxA)		0.002	0.00218	ug/L	109	(50-150)		
MS1_202004140649	Perfluorohexanoic acid (PFHxA)	ND	0.025	0.0262	ug/L	105	(70-130)		
MSD1_202004140649	Perfluorohexanoic acid (PFHxA)	ND	0.025	0.0278	ug/L	111	(70-130)	30	5.8
LCS3	Perfluorononanoic acid (PFNA)		0.05	0.0535	ug/L	107	(70-130)		
LCS4	Perfluorononanoic acid (PFNA)		0.05	0.0529	ug/L	106	(70-130)	30	1.1
MBLK	Perfluorononanoic acid (PFNA)			<0.000667	ug/L				
MRL_CHK	Perfluorononanoic acid (PFNA)		0.002	0.00215	ug/L	108	(50-150)		
MS1_202004140649	Perfluorononanoic acid (PFNA)	ND	0.025	0.0273	ug/L	109	(70-130)		
MSD1_202004140649	Perfluorononanoic acid (PFNA)	ND	0.025	0.0275	ug/L	110	(70-130)	30	0.68
LCS3	Perfluorooctanesulfonic acid (PFOS)		0.046	0.0491	ug/L	106	(70-130)		
LCS4	Perfluorooctanesulfonic acid (PFOS)		0.046	0.0480	ug/L	104	(70-130)	30	2.3
MBLK	Perfluorooctanesulfonic acid (PFOS)			<0.000667	ug/L				
MRL_CHK	Perfluorooctanesulfonic acid (PFOS)		0.0019	0.00188	ug/L	102	(50-150)		
MS1_202004140649	Perfluorooctanesulfonic acid (PFOS)	ND	0.023	0.0247	ug/L	106	(70-130)		
MSD1_202004140649	Perfluorooctanesulfonic acid (PFOS)	ND	0.023	0.0246	ug/L	106	(70-130)	30	0.41
LCS3	Perfluorooctanoic acid (PFOA)		0.05	0.0543	ug/L	109	(70-130)		
LCS4	Perfluorooctanoic acid (PFOA)		0.05	0.0551	ug/L	110	(70-130)	30	1.5

Spike recovery is already corrected for native results.
Spike which exceed Limit and Method Blank with positive result are highlighted by Underlining
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MBLK	Perfluorooctanoic acid (PFOA)			<0.000667	ug/L				
MRL_CHK	Perfluorooctanoic acid (PFOA)		0.002	0.00212	ug/L	106	(50-150)		
MS1_202004140649	Perfluorooctanoic acid (PFOA)	ND	0.025	0.0271	ug/L	108	(70-130)		
MSD1_202004140649	Perfluorooctanoic acid (PFOA)	ND	0.025	0.0270	ug/L	107	(70-130)	30	0.51
LCS3	Perfluorotetradecanoic acid (PFTA)		0.05	0.0599	ug/L	120	(70-130)		
LCS4	Perfluorotetradecanoic acid (PFTA)		0.05	0.0609	ug/L	122	(70-130)	30	1.7
MBLK	Perfluorotetradecanoic acid (PFTA)			<0.000667	ug/L				
MRL_CHK	Perfluorotetradecanoic acid (PFTA)		0.002	0.00248	ug/L	124	(50-150)		
MS1_202004140649	Perfluorotetradecanoic acid (PFTA)	ND	0.025	0.0304	ug/L	121	(70-130)		
MSD1_202004140649	Perfluorotetradecanoic acid (PFTA)	ND	0.025	0.0306	ug/L	122	(70-130)	30	0.58
LCS3	Perfluorotridecanoic acid (PFTrDA)		0.05	0.0524	ug/L	105	(70-130)		
LCS4	Perfluorotridecanoic acid (PFTrDA)		0.05	0.0530	ug/L	106	(70-130)	30	1.1
MBLK	Perfluorotridecanoic acid (PFTrDA)			<0.000667	ug/L				
MRL_CHK	Perfluorotridecanoic acid (PFTrDA)		0.002	0.00214	ug/L	107	(50-150)		
MS1_202004140649	Perfluorotridecanoic acid (PFTrDA)	ND	0.025	0.0266	ug/L	107	(70-130)		
MSD1_202004140649	Perfluorotridecanoic acid (PFTrDA)	ND	0.025	0.0270	ug/L	108	(70-130)	30	1.4
LCS3	Perfluoroundecanoic acid (PFUnA)		0.05	0.0518	ug/L	104	(70-130)		
LCS4	Perfluoroundecanoic acid (PFUnA)		0.05	0.0530	ug/L	106	(70-130)	30	2.1
MBLK	Perfluoroundecanoic acid (PFUnA)			<0.000667	ug/L				
MRL_CHK	Perfluoroundecanoic acid (PFUnA)		0.002	0.00207	ug/L	103	(50-150)		
MS1_202004140649	Perfluoroundecanoic acid (PFUnA)	ND	0.025	0.0250	ug/L	100	(70-130)		
MSD1_202004140649	Perfluoroundecanoic acid (PFUnA)	ND	0.025	0.0264	ug/L	105	(70-130)	30	5.3
Mercury ICPMS by EPA 200.8									
Analytical Batch: 1243357						**Analysis Date: 04/22/2020**			
LCS1	Mercury ICPMS		0.75	0.738	ug/L	98	(85-115)		
LCS2	Mercury ICPMS		0.75	0.761	ug/L	101	(85-115)	20	3.1
MBLK	Mercury ICPMS			<0.1	ug/L				
MRL_CHK	Mercury ICPMS		0.2	0.212	ug/L	106	(50-150)		
MS_202004090193	Mercury ICPMS	0.25	0.75	0.952	ug/L	95	(70-130)		
MS2_202004100005	Mercury ICPMS	ND	0.75	0.745	ug/L	99	(70-130)		
MSD_202004090193	Mercury ICPMS	0.25	0.75	1.02	ug/L	104	(70-130)	20	7.9
MSD2_202004100005	Mercury ICPMS	ND	0.75	0.738	ug/L	98	(70-130)	20	0.94
ICPMS Metals by EPA 200.8									
Analytical Batch: 1243359						**Analysis Date: 04/22/2020**			
LCS1	Aluminum Total ICAP/MS		100	98.8	ug/L	99	(85-115)		
LCS2	Aluminum Total ICAP/MS		100	102	ug/L	102	(85-115)	20	3.2
MBLK	Aluminum Total ICAP/MS			<10	ug/L				

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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
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Laboratory QC

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MRL_CHK	Aluminum Total ICAP/MS		20	20.9	ug/L	104	(50-150)		
MS_202004090193	Aluminum Total ICAP/MS	ND	100	102	ug/L	97	(70-130)		
MS2_202004100005	Aluminum Total ICAP/MS	ND	100	108	ug/L	105	(70-130)		
MSD_202004090193	Aluminum Total ICAP/MS	ND	100	107	ug/L	103	(70-130)	20	5.2
MSD2_202004100005	Aluminum Total ICAP/MS	ND	100	102	ug/L	99	(70-130)	20	5.6
LCS1	Antimony Total ICAP/MS		50	50.4	ug/L	101	(85-115)		
LCS2	Antimony Total ICAP/MS		50	50.5	ug/L	101	(85-115)	20	0.20
MBLK	Antimony Total ICAP/MS			<0.5	ug/L				
MRL_CHK	Antimony Total ICAP/MS		1	1.08	ug/L	108	(50-150)		
MS_202004090193	Antimony Total ICAP/MS	ND	50	51.3	ug/L	102	(70-130)		
MS2_202004100005	Antimony Total ICAP/MS	ND	50	54.4	ug/L	109	(70-130)		
MSD_202004090193	Antimony Total ICAP/MS	ND	50	54.0	ug/L	108	(70-130)	20	5.2
MSD2_202004100005	Antimony Total ICAP/MS	ND	50	53.2	ug/L	106	(70-130)	20	2.3
LCS1	Arsenic Total ICAP/MS		50	49.6	ug/L	99	(85-115)		
LCS2	Arsenic Total ICAP/MS		50	50.8	ug/L	102	(85-115)	20	2.4
MBLK	Arsenic Total ICAP/MS			<0.5	ug/L				
MRL_CHK	Arsenic Total ICAP/MS		1	1.02	ug/L	102	(50-150)		
MS_202004090193	Arsenic Total ICAP/MS	ND	50	51.2	ug/L	102	(70-130)		
MS2_202004100005	Arsenic Total ICAP/MS	3.3	50	58.1	ug/L	110	(70-130)		
MSD_202004090193	Arsenic Total ICAP/MS	ND	50	56.3	ug/L	112	(70-130)	20	9.5
MSD2_202004100005	Arsenic Total ICAP/MS	3.3	50	57.2	ug/L	108	(70-130)	20	1.6
LCS1	Barium Total ICAP/MS		50	51.4	ug/L	103	(85-115)		
LCS2	Barium Total ICAP/MS		50	51.0	ug/L	102	(85-115)	20	0.78
MBLK	Barium Total ICAP/MS			<1	ug/L				
MRL_CHK	Barium Total ICAP/MS		2	1.99	ug/L	99	(50-150)		
MS_202004090193	Barium Total ICAP/MS	ND	50	52.4	ug/L	103	(70-130)		
MS2_202004100005	Barium Total ICAP/MS	140	50	196	ug/L	108	(70-130)		
MSD_202004090193	Barium Total ICAP/MS	ND	50	55.0	ug/L	109	(70-130)	20	4.8
MSD2_202004100005	Barium Total ICAP/MS	140	50	194	ug/L	106	(70-130)	20	0.30
LCS1	Beryllium Total ICAP/MS		25	25.7	ug/L	103	(85-115)		
LCS2	Beryllium Total ICAP/MS		25	24.9	ug/L	100	(85-115)	20	3.2
MBLK	Beryllium Total ICAP/MS			<0.5	ug/L				
MRL_CHK	Beryllium Total ICAP/MS		1	0.996	ug/L	100	(50-150)		
MS_202004090193	Beryllium Total ICAP/MS	ND	25	26.1	ug/L	105	(70-130)		
MS2_202004100005	Beryllium Total ICAP/MS	ND	25	26.8	ug/L	107	(70-130)		
MSD_202004090193	Beryllium Total ICAP/MS	ND	25	27.6	ug/L	110	(70-130)	20	5.5
MSD2_202004100005	Beryllium Total ICAP/MS	ND	25	26.0	ug/L	104	(70-130)	20	2.8
LCS1	Cadmium Total ICAP/MS		25	24.8	ug/L	99	(85-115)		

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Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS2	Cadmium Total ICAP/MS		25	24.8	ug/L	99	(85-115)	20	0.0
MBLK	Cadmium Total ICAP/MS			<0.25	ug/L				
MRL_CHK	Cadmium Total ICAP/MS		0.5	0.501	ug/L	100	(50-150)		
MS_202004090193	Cadmium Total ICAP/MS	ND	25	25.6	ug/L	103	(70-130)		
MS2_202004100005	Cadmium Total ICAP/MS	ND	25	25.7	ug/L	103	(70-130)		
MSD_202004090193	Cadmium Total ICAP/MS	ND	25	27.2	ug/L	109	(70-130)	20	5.9
MSD2_202004100005	Cadmium Total ICAP/MS	ND	25	25.1	ug/L	100	(70-130)	20	2.4
LCS1	Chromium Total ICAP/MS		50	49.3	ug/L	99	(85-115)		
LCS2	Chromium Total ICAP/MS		50	50.8	ug/L	102	(85-115)	20	3.0
MBLK	Chromium Total ICAP/MS			<0.5	ug/L				
MRL_CHK	Chromium Total ICAP/MS		1	1.04	ug/L	104	(50-150)		
MS_202004090193	Chromium Total ICAP/MS	ND	50	48.6	ug/L	97	(70-130)		
MS2_202004100005	Chromium Total ICAP/MS	3.1	50	49.7	ug/L	93	(70-130)		
MSD_202004090193	Chromium Total ICAP/MS	ND	50	51.8	ug/L	103	(70-130)	20	6.3
MSD2_202004100005	Chromium Total ICAP/MS	3.1	50	48.8	ug/L	91	(70-130)	20	1.8
LCS1	Copper Total ICAP/MS		50	50.9	ug/L	102	(85-115)		
LCS2	Copper Total ICAP/MS		50	52.0	ug/L	104	(85-115)	20	2.1
MBLK	Copper Total ICAP/MS			<1	ug/L				
MRL_CHK	Copper Total ICAP/MS		2	2.00	ug/L	100	(50-150)		
MS_202004090193	Copper Total ICAP/MS	2.8	50	53.1	ug/L	101	(70-130)		
MS2_202004100005	Copper Total ICAP/MS	ND	50	49.3	ug/L	98	(70-130)		
MSD_202004090193	Copper Total ICAP/MS	2.8	50	56.2	ug/L	107	(70-130)	20	5.6
MSD2_202004100005	Copper Total ICAP/MS	ND	50	46.7	ug/L	93	(70-130)	20	5.3
LCS1	Lead Total ICAP/MS		50	50.5	ug/L	101	(85-115)		
LCS2	Lead Total ICAP/MS		50	50.8	ug/L	102	(85-115)	20	0.59
MBLK	Lead Total ICAP/MS			<0.25	ug/L				
MRL_CHK	Lead Total ICAP/MS		0.5	0.494	ug/L	99	(50-150)		
MS_202004090193	Lead Total ICAP/MS	0.52	50	50.4	ug/L	100	(70-130)		
MS2_202004100005	Lead Total ICAP/MS	ND	50	48.6	ug/L	97	(70-130)		
MSD_202004090193	Lead Total ICAP/MS	0.52	50	53.3	ug/L	106	(70-130)	20	5.6
MSD2_202004100005	Lead Total ICAP/MS	ND	50	48.3	ug/L	97	(70-130)	20	0.68
LCS1	Nickel Total ICAP/MS		50	50.2	ug/L	100	(85-115)		
LCS2	Nickel Total ICAP/MS		50	52.0	ug/L	104	(85-115)	20	3.5
MBLK	Nickel Total ICAP/MS			<2.5	ug/L				
MRL_CHK	Nickel Total ICAP/MS		5	5.06	ug/L	101	(50-150)		
MS_202004090193	Nickel Total ICAP/MS	ND	50	49.5	ug/L	99	(70-130)		
MS2_202004100005	Nickel Total ICAP/MS	ND	50	48.8	ug/L	96	(70-130)		
MSD_202004090193	Nickel Total ICAP/MS	ND	50	53.3	ug/L	106	(70-130)	20	7.5

Spike recovery is already corrected for native results.
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Laboratory QC

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MSD2_202004100005	Nickel Total ICAP/MS	ND	50	48.6	ug/L	96	(70-130)	20	0.41
LCS1	Selenium Total ICAP/MS		50	48.8	ug/L	98	(85-115)		
LCS2	Selenium Total ICAP/MS		50	50.4	ug/L	101	(85-115)	20	3.0
MBLK	Selenium Total ICAP/MS			<2.5	ug/L				
MRL_CHK	Selenium Total ICAP/MS		5	5.06	ug/L	101	(50-150)		
MS_202004090193	Selenium Total ICAP/MS	ND	50	54.7	ug/L	109	(70-130)		
MS2_202004100005	Selenium Total ICAP/MS	ND	50	56.3	ug/L	110	(70-130)		
MSD_202004090193	Selenium Total ICAP/MS	ND	50	57.8	ug/L	115	(70-130)	20	5.8
MSD2_202004100005	Selenium Total ICAP/MS	ND	50	55.1	ug/L	107	(70-130)	20	2.1
LCS1	Thallium Total ICAP/MS		50	50.2	ug/L	100	(85-115)		
LCS2	Thallium Total ICAP/MS		50	50.8	ug/L	102	(85-115)	20	1.2
MBLK	Thallium Total ICAP/MS			<0.5	ug/L				
MRL_CHK	Thallium Total ICAP/MS		1	0.986	ug/L	99	(50-150)		
MS_202004090193	Thallium Total ICAP/MS	ND	50	48.8	ug/L	98	(70-130)		
MS2_202004100005	Thallium Total ICAP/MS	ND	50	48.5	ug/L	97	(70-130)		
MSD_202004090193	Thallium Total ICAP/MS	ND	50	52.6	ug/L	105	(70-130)	20	7.6
MSD2_202004100005	Thallium Total ICAP/MS	ND	50	48.4	ug/L	97	(70-130)	20	0.27
LCS1	Zinc Total ICAP/MS		50	49.7	ug/L	99	(85-115)		
LCS2	Zinc Total ICAP/MS		50	50.5	ug/L	101	(85-115)	20	1.6
MBLK	Zinc Total ICAP/MS			<10	ug/L				
MRL_CHK	Zinc Total ICAP/MS		20	20.1	ug/L	101	(50-150)		
MS_202004090193	Zinc Total ICAP/MS	ND	50	78.5	ug/L	121	(70-130)		
MS2_202004100005	Zinc Total ICAP/MS	ND	50	70.4	ug/L	111	(70-130)		
MSD_202004090193	Zinc Total ICAP/MS	ND	50	72.0	ug/L	108	(70-130)	20	8.7
MSD2_202004100005	Zinc Total ICAP/MS	ND	50	68.6	ug/L	107	(70-130)	20	2.4
Disinfection ByProducts by 300.0 by EPA 300.0									
Analytical Batch: 1244017						**Analysis Date: 04/24/2020**			
LCS1	Chlorate by IC		200	202	ug/L	101	(90-110)		
LCS2	Chlorate by IC		200	202	ug/L	101	(90-110)	20	0.0
MBLK	Chlorate by IC			<5	ug/L				
MRL_CHK	Chlorate by IC		10	12.1	ug/L	121	(75-125)		
MS_202004150380	Chlorate by IC	ND	100	110	ug/L	101	(80-120)		
MS_202004210441	Chlorate by IC	ND	100	90.9	ug/L	91	(80-120)		
MSD_202004150380	Chlorate by IC	ND	100	110	ug/L	101	(80-120)	15	0.28
MSD_202004210441	Chlorate by IC	ND	100	90.6	ug/L	91	(80-120)	15	0.39
UCMR3 Metals by UCMR 200.8									
Prep Batch: 1243760 Analytical Batch: 1245326						**Analysis Date: 04/28/2020**			

Spike recovery is already corrected for native results.
Spike which exceed Limit and Method Blank with positive result are highlighted by Underlining
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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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Laboratory QC

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS1	Chromium		10	9.10	ug/L	91	(85-115)		
LCS2	Chromium		10	8.90	ug/L	89	(85-115)	20	2.2
MBLK	Chromium			<0.2	ug/L				
MRL_CHK	Chromium		0.2	0.198	ug/L	99	(50-150)		
MS2_202004150421	Chromium	1.3	0.2	1.42	ug/L	**49**	(70-130)		
MSD2_202004150421	Chromium	1.3	0.2	1.41	ug/L	**48**	(70-130)	20	0.46
LCS1	Cobalt		10	9.17	ug/L	92	(85-115)		
LCS2	Cobalt		10	8.84	ug/L	88	(85-115)	20	3.7
MBLK	Cobalt			<1	ug/L				
MRL_CHK	Cobalt		1	0.944	ug/L	94	(50-150)		
MS2_202004150421	Cobalt	ND	1	0.745	ug/L	73	(70-130)		
MSD2_202004150421	Cobalt	ND	1	0.754	ug/L	73	(70-130)	20	1.2
LCS1	Indium (115) (S)		100	92.6	%	93	(60-125)		
LCS2	Indium (115) (S)		100	93.5	%	94	(60-125)		
MBLK	Indium (115) (S)			91.0	%	91	(60-125)		
MRL_CHK	Indium (115) (S)		100	90.9	%		(60-125)		
MS2_202004150421	Indium (115) (S)		100	86.8	%	87	(60-125)		
MSD2_202004150421	Indium (115) (S)		100	95.9	%	96	(60-125)		
LCS1	Molybdenum		10	9.22	ug/L	92	(85-115)		
LCS2	Molybdenum		10	8.81	ug/L	88	(85-115)	20	4.5
MBLK	Molybdenum			<1	ug/L				
MRL_CHK	Molybdenum		1	0.974	ug/L	97	(50-150)		
MS2_202004150421	Molybdenum	ND	1	1.14	ug/L	91	(70-130)		
MSD2_202004150421	Molybdenum	ND	1	1.11	ug/L	88	(70-130)	20	2.9
LCS1	Scandium (45) (S)		100	93.2	%	93	(60-125)		
LCS2	Scandium (45) (S)		100	94.0	%	94	(60-125)		
MBLK	Scandium (45) (S)			92.1	%	92	(60-125)		
MRL_CHK	Scandium (45) (S)		100	92.0	%		(60-125)		
MS2_202004150421	Scandium (45) (S)		100	104	%	104	(60-125)		
MSD2_202004150421	Scandium (45) (S)		100	116	%	116	(60-125)		
LCS1	Strontium		10	9.03	ug/L	90	(85-115)		
LCS2	Strontium		10	8.68	ug/L	87	(85-115)	20	4.0
MBLK	Strontium			<0.3	ug/L				
MRL_CHK	Strontium		0.3	0.298	ug/L	99	(50-150)		
MS2_202004150421	Strontium	210	0.3	207	ug/L	**-263**	(70-130)		
MSD2_202004150421	Strontium	210	0.3	206	ug/L	**-576**	(70-130)	20	0.34
LCS1	Vanadium		10	9.04	ug/L	90	(85-115)		
LCS2	Vanadium		10	8.92	ug/L	89	(85-115)	20	1.3

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Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MBLK	Vanadium			<0.2	ug/L				
MRL_CHK	Vanadium		0.2	0.149	ug/L	74	(50-150)		
MS2_202004150421	Vanadium	7.4	0.2	7.57	ug/L	78	(70-130)		
MSD2_202004150421	Vanadium	7.4	0.2	7.39	ug/L	**-16.3**	(70-130)	20	2.5
EPA Method 537.1 by EPA 537.1									
Prep Batch: 1246050 Analytical Batch: 1246346						**Analysis Date: 05/04/2020**			
LCS1	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.024	0.0295	ug/L	125	(70-130)		
LCS2	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.024	0.0287	ug/L	122	(70-130)	30	2.8
MBLK	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid			<0.000667	ug/L				
MRL_CHK	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.0019	0.00209	ug/L	111	(50-150)		
MS1 202004290358	11 chloroeicosafluoro 3 oxaundecane sulfonic acid	ND	0 024	0 0288	ug/L	122	(70 130)		
MSD1_202004290358	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	0.024	0.0279	ug/L	118	(70-130)	30	3.0
LCS1	13C2-PFDA (S)		100	105	%	105	(70-130)		
LCS2	13C2-PFDA (S)		100	103	%	103	(70-130)		
MBLK	13C2-PFDA (S)			98.9	%	99	(70-130)		
MRL_CHK	13C2-PFDA (S)		100	99.7	%	100	(70-130)		
MS1_202004290358	13C2-PFDA (S)		100	102	%	102	(70-130)		
MSD1_202004290358	13C2-PFDA (S)		100	98.9	%	99	(70-130)		
LCS1	13C2-PFHxA (S)		100	96.8	%	97	(70-130)		
LCS2	13C2-PFHxA (S)		100	94.9	%	95	(70-130)		
MBLK	13C2-PFHxA (S)			96.9	%	97	(70-130)		
MRL_CHK	13C2-PFHxA (S)		100	97.6	%	98	(70-130)		
MS1_202004290358	13C2-PFHxA (S)		100	104	%	104	(70-130)		
MSD1_202004290358	13C2-PFHxA (S)		100	100	%	100	(70-130)		
LCS1	13C2-PFOA– IS#1 (I)		100	100	%	100	(50-150)		
LCS2	13C2-PFOA– IS#1 (I)		100	101	%	101	(50-150)		
MBLK	13C2-PFOA– IS#1 (I)			105	%	105	(50-150)		
MRL_CHK	13C2-PFOA– IS#1 (I)		100	104	%	105	(50-150)		
MS1_202004290358	13C2-PFOA– IS#1 (I)		100	100	%	100	(50-150)		
MSD1_202004290358	13C2-PFOA– IS#1 (I)		100	100	%	100	(50-150)		
LCS1	13C3-HFPO-DA (S)		100	84.6	%	85	(70-130)		
LCS2	13C3-HFPO-DA (S)		100	86.6	%	87	(70-130)		
MBLK	13C3-HFPO-DA (S)			86.8	%	87	(70-130)		
MRL_CHK	13C3-HFPO-DA (S)		100	89.2	%	89	(70-130)		
MS1_202004290358	13C3-HFPO-DA (S)		100	95.0	%	95	(70-130)		
MSD1_202004290358	13C3-HFPO-DA (S)		100	92.0	%	92	(70-130)		
LCS1	13C4-PFOS– IS#2 (I)		100	102	%	102	(50-150)		

Spike recovery is already corrected for native results.
Spike which e ceed Limit and Method Blank with po itive re ult are highlighted by Underlining
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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
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Laboratory QC

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS2	13C4-PFOS– IS#2 (I)		100	104	%	104	(50-150)		
MBLK	13C4-PFOS– IS#2 (I)			103	%	103	(50-150)		
MRL_CHK	13C4-PFOS– IS#2 (I)		100	102	%	102	(50-150)		
MS1_202004290358	13C4-PFOS– IS#2 (I)		100	102	%	102	(50-150)		
MSD1_202004290358	13C4-PFOS– IS#2 (I)		100	100	%	100	(50-150)		
LCS1	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.024	0.0276	ug/L	117	(70-130)		
LCS2	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.024	0.0272	ug/L	115	(70-130)	30	1.5
MBLK	4,8-dioxa-3H-perfluorononanoic acid (ADONA)			<0.000667	ug/L				
MRL_CHK	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.0019	0.00197	ug/L	104	(50-150)		
MS1_202004290358	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.024	0.0291	ug/L	123	(70-130)		
MSD1_202004290358	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.024	0.0268	ug/L	113	(70-130)	30	8.1
LCS1	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.023	0.0264	ug/L	113	(70-130)		
LCS2	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.023	0.0256	ug/L	110	(70-130)	30	3.1
MBLK	9-chlorohexadecafluoro-3-oxanone-sulfonic acid			<0.000667	ug/L				
MRL_CHK	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.0019	0.00194	ug/L	104	(50-150)		
MS1_202004290358	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	0.023	0.0263	ug/L	113	(70-130)		
MSD1_202004290358	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	0.023	0.0253	ug/L	109	(70-130)	30	3.8
LCS1	d3-NMeFOSAA (I)		100	105	%	105	(50-150)		
LCS2	d3-NMeFOSAA (I)		100	105	%	105	(50-150)		
MBLK	d3-NMeFOSAA (I)			105	%	105	(50-150)		
MRL_CHK	d3-NMeFOSAA (I)		100	107	%	107	(50-150)		
MS1_202004290358	d3-NMeFOSAA (I)		100	106	%	106	(50-150)		
MSD1_202004290358	d3-NMeFOSAA (I)		100	104	%	105	(50-150)		
LCS1	d5-NEtFOSAA (S)		100	89.8	%	90	(70-130)		
LCS2	d5-NEtFOSAA (S)		100	92.5	%	93	(70-130)		
MBLK	d5-NEtFOSAA (S)			91.6	%	92	(70-130)		
MRL_CHK	d5-NEtFOSAA (S)		100	93.0	%	93	(70-130)		
MS1_202004290358	d5-NEtFOSAA (S)		100	96.0	%	96	(70-130)		
MSD1_202004290358	d5-NEtFOSAA (S)		100	95.9	%	96	(70-130)		
LCS1	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.025	0.0255	ug/L	102	(70-130)		
LCS2	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.025	0.0247	ug/L	99	(70-130)	30	3.2
MBLK	Hexafluoropropylene oxide dimer acid (HFPO-DA)			<0.001667	ug/L				
MRL_CHK	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.002	0.00188	ug/L	94	(50-150)		
MS1_202004290358	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.025	0.0283	ug/L	113	(70-130)		
MSD1_202004290358	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.025	0.0267	ug/L	107	(70-130)	30	6.0
LCS1	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.025	0.0274	ug/L	110	(70-130)		
LCS2	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.025	0.0275	ug/L	110	(70-130)	30	0.36
MBLK	N-ethyl Perfluorooctanesulfonamidoacetic acid			<0.000667	ug/L				

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Laboratory QC

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MRL_CHK	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.002	0.00201	ug/L	101	(50-150)		
MS1_202004290358	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	0.025	0.0287	ug/L	115	(70-130)		
MSD1_202004290358	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	0.025	0.0278	ug/L	111	(70-130)	30	3.1
LCS1	N-methyl Perfluorooctanesulfonamidoacetic acid		0.025	0.0266	ug/L	106	(70-130)		
LCS2	N-methyl Perfluorooctanesulfonamidoacetic acid		0.025	0.0267	ug/L	107	(70-130)	30	0.38
MBLK	N-methyl Perfluorooctanesulfonamidoacetic acid			<0.000667	ug/L				
MRL_CHK	N-methyl Perfluorooctanesulfonamidoacetic acid		0.002	0.00200	ug/L	100	(50-150)		
MS1_202004290358	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	0.025	0.0280	ug/L	112	(70-130)		
MSD1_202004290358	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	0.025	0.0272	ug/L	109	(70-130)	30	2.7
LCS1	Perfluorobutanesulfonic acid (PFBS)		0.022	0.0208	ug/L	94	(70-130)		
LCS2	Perfluorobutanesulfonic acid (PFBS)		0.022	0.0209	ug/L	95	(70-130)	30	0.48
MBLK	Perfluorobutanesulfonic acid (PFBS)			<0.000667	ug/L				
MRL_CHK	Perfluorobutanesulfonic acid (PFBS)		0.0018	0.00181	ug/L	102	(50-150)		
MS1_202004290358	Perfluorobutanesulfonic acid (PFBS)	ND	0.022	0.0234	ug/L	105	(70-130)		
MSD1_202004290358	Perfluorobutanesulfonic acid (PFBS)	ND	0.022	0.0225	ug/L	101	(70-130)	30	4.0
LCS1	Perfluorodecanoic acid (PFDA)		0.025	0.0302	ug/L	121	(70-130)		
LCS2	Perfluorodecanoic acid (PFDA)		0.025	0.0299	ug/L	120	(70-130)	30	1
MBLK	Perfluorodecanoic acid (PFDA)			<0.000667	ug/L				
MRL_CHK	Perfluorodecanoic acid (PFDA)		0.002	0.00218	ug/L	109	(50-150)		
MS1_202004290358	Perfluorodecanoic acid (PFDA)	ND	0.025	0.0302	ug/L	121	(70-130)		
MSD1_202004290358	Perfluorodecanoic acid (PFDA)	ND	0.025	0.0291	ug/L	116	(70-130)	30	3.8
LCS1	Perfluorododecanoic acid (PFDoA)		0.025	0.0304	ug/L	121	(70-130)		
LCS2	Perfluorododecanoic acid (PFDoA)		0.025	0.0291	ug/L	117	(70-130)	30	4.4
MBLK	Perfluorododecanoic acid (PFDoA)			<0.000667	ug/L				
MRL_CHK	Perfluorododecanoic acid (PFDoA)		0.002	0.00219	ug/L	110	(50-150)		
MS1_202004290358	Perfluorododecanoic acid (PFDoA)	ND	0.025	0.0308	ug/L	123	(70-130)		
MSD1_202004290358	Perfluorododecanoic acid (PFDoA)	ND	0.025	0.0296	ug/L	118	(70-130)	30	4.0
LCS1	Perfluoroheptanoic acid (PFHpA)		0.025	0.0308	ug/L	123	(70-130)		
LCS2	Perfluoroheptanoic acid (PFHpA)		0.025	0.0299	ug/L	119	(70-130)	30	3.0
MBLK	Perfluoroheptanoic acid (PFHpA)			<0.000667	ug/L				
MRL_CHK	Perfluoroheptanoic acid (PFHpA)		0.002	0.00224	ug/L	112	(50-150)		
MS1_202004290358	Perfluoroheptanoic acid (PFHpA)	ND	0.025	0.0317	ug/L	127	(70-130)		
MSD1_202004290358	Perfluoroheptanoic acid (PFHpA)	ND	0.025	0.0295	ug/L	118	(70-130)	30	7.3
LCS1	Perfluorohexanesulfonic acid (PFHxS)		0.023	0.0264	ug/L	116	(70-130)		
LCS2	Perfluorohexanesulfonic acid (PFHxS)		0.023	0.0256	ug/L	112	(70-130)	30	3.1
MBLK	Perfluorohexanesulfonic acid (PFHxS)			<0.000667	ug/L				
MRL_CHK	Perfluorohexanesulfonic acid (PFHxS)		0.0018	0.00193	ug/L	106	(50-150)		
MS1_202004290358	Perfluorohexanesulfonic acid (PFHxS)	ND	0.023	0.0263	ug/L	116	(70-130)		

Spike recovery is already corrected for native results.
Spike which e ceed Limit and Method Blank with po itive re ult are highlighted by Underlining
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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MSD1_202004290358	Perfluorohexanesulfonic acid (PFHxS)	ND	0.023	0.0253	ug/L	111	(70-130)	30	4.1
LCS1	Perfluorohexanoic acid (PFHxA)		0.025	0.0277	ug/L	111	(70-130)		
LCS2	Perfluorohexanoic acid (PFHxA)		0.025	0.0271	ug/L	108	(70-130)	30	2.2
MBLK	Perfluorohexanoic acid (PFHxA)			<0.000667	ug/L				
MRL_CHK	Perfluorohexanoic acid (PFHxA)		0.002	0.00215	ug/L	108	(50-150)		
MS1_202004290358	Perfluorohexanoic acid (PFHxA)	ND	0.025	0.0302	ug/L	120	(70-130)		
MSD1_202004290358	Perfluorohexanoic acid (PFHxA)	ND	0.025	0.0281	ug/L	112	(70-130)	30	7.1
LCS1	Perfluorononanoic acid (PFNA)		0.025	0.0306	ug/L	122	(70-130)		
LCS2	Perfluorononanoic acid (PFNA)		0.025	0.0291	ug/L	117	(70-130)	30	5.0
MBLK	Perfluorononanoic acid (PFNA)			<0.000667	ug/L				
MRL_CHK	Perfluorononanoic acid (PFNA)		0.002	0.00217	ug/L	108	(50-150)		
MS1_202004290358	Perfluorononanoic acid (PFNA)	ND	0.025	0.0313	ug/L	125	(70-130)		
MSD1_202004290358	Perfluorononanoic acid (PFNA)	ND	0.025	0.0300	ug/L	120	(70-130)	30	4.0
LCS1	Perfluorooctanesulfonic acid (PFOS)		0.023	0.0271	ug/L	117	(70-130)		
LCS2	Perfluorooctanesulfonic acid (PFOS)		0.023	0.0265	ug/L	115	(70-130)	30	2.2
MBLK	Perfluorooctanesulfonic acid (PFOS)			<0.000667	ug/L				
MRL_CHK	Perfluorooctanesulfonic acid (PFOS)		0.0019	0.00194	ug/L	105	(50-150)		
MS1_202004290358	Perfluorooctanesulfonic acid (PFOS)	ND	0.023	0.0260	ug/L	112	(70-130)		
MSD1_202004290358	Perfluorooctanesulfonic acid (PFOS)	ND	0.023	0.0258	ug/L	111	(70-130)	30	0.96
LCS1	Perfluorooctanoic acid (PFOA)		0.025	0.0295	ug/L	118	(70-130)		
LCS2	Perfluorooctanoic acid (PFOA)		0.025	0.0281	ug/L	112	(70-130)	30	4.9
MBLK	Perfluorooctanoic acid (PFOA)			<0.000667	ug/L				
MRL_CHK	Perfluorooctanoic acid (PFOA)		0.002	0.00228	ug/L	114	(50-150)		
MS1_202004290358	Perfluorooctanoic acid (PFOA)	ND	0.025	0.0302	ug/L	120	(70-130)		
MSD1_202004290358	Perfluorooctanoic acid (PFOA)	ND	0.025	0.0292	ug/L	116	(70-130)	30	3.3
LCS1	Perfluorotetradecanoic acid (PFTA)		0.025	0.0335	ug/L	**134**	(70-130)		
LCS2	Perfluorotetradecanoic acid (PFTA)		0.025	0.0322	ug/L	129	(70-130)	30	4.0
MBLK	Perfluorotetradecanoic acid (PFTA)			<0.000667	ug/L				
MRL_CHK	Perfluorotetradecanoic acid (PFTA)		0.002	0.00256	ug/L	128	(50-150)		
MS1_202004290358	Perfluorotetradecanoic acid (PFTA)	ND	0.025	0.0346	ug/L	**138**	(70-130)		
MSD1_202004290358	Perfluorotetradecanoic acid (PFTA)	ND	0.025	0.0322	ug/L	128	(70-130)	30	7.3
LCS1	Perfluorotridecanoic acid (PFTrDA)		0.025	0.0305	ug/L	122	(70-130)		
LCS2	Perfluorotridecanoic acid (PFTrDA)		0.025	0.0282	ug/L	113	(70-130)	30	7.8
MBLK	Perfluorotridecanoic acid (PFTrDA)			<0.000667	ug/L				
MRL_CHK	Perfluorotridecanoic acid (PFTrDA)		0.002	0.00216	ug/L	108	(50-150)		
MS1_202004290358	Perfluorotridecanoic acid (PFTrDA)	ND	0.025	0.0314	ug/L	125	(70-130)		
MSD1_202004290358	Perfluorotridecanoic acid (PFTrDA)	ND	0.025	0.0290	ug/L	116	(70-130)	30	7.8
LCS1	Perfluoroundecanoic acid (PFUnA)		0.025	0.0306	ug/L	123	(70-130)		

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Laboratory QC

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS2	Perfluoroundecanoic acid (PFUnA)		0.025	0.0301	ug/L	120	(70-130)	30	1.6
MBLK	Perfluoroundecanoic acid (PFUnA)			<0.000667	ug/L				
MRL_CHK	Perfluoroundecanoic acid (PFUnA)		0.002	0.00216	ug/L	108	(50-150)		
MS1_202004290358	Perfluoroundecanoic acid (PFUnA)	ND	0.025	0.0295	ug/L	118	(70-130)		
MSD1_202004290358	Perfluoroundecanoic acid (PFUnA)	ND	0.025	0.0282	ug/L	113	(70-130)	30	4.5

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RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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Laboratory Hits

Report: 865885
Project: SPECIAL
Group: Special Met/Cr6-218.7/DBP/537.1

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/15/2020 1700

Analyzed	Analyte	Sample ID	Result	HI Limit	Units	MRL
	202004150421	**HALAWA SHAFT (331-241-TP401)**				
04/22/2020 14:16	Barium Total ICAP/MS		16	2000	ug/L	2.0
04/24/2020 15:15	Chlorate by IC		30		ug/L	10
04/28/2020 21:07	Chromium		1.3	100	ug/L	0.20
04/22/2020 14:16	Chromium Total ICAP/MS		2.0	100	ug/L	1.0
04/22/2020 14:16	Copper Total ICAP/MS		5.1	1300	ug/L	2.0
04/19/2020 13:14	Hexavalent Chromium		1.8		ug/L	0.020
04/16/2020 12:38	Sodium Total ICAP		42		mg/L	1.0
04/28/2020 21:07	Strontium		210		ug/L	0.30
04/28/2020 21:07	Vanadium		7.4		ug/L	0.20

SUMMARY OF POSITIVE DATA ONLY

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Laboratory Report

for

Honolulu Board of Water Supply
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843
Attention: Erwin Kawata
Fax: 808-550-5018

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Date of Issue
04/29/2021

Linda Geddes
EUROFINS EATON
ANALYTICAL, LLC

DEB: Debbie L Frank
Project Manager

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3 200.8 ClO3, Cr6 + Al, Zn

* Accredited in accordance with **TNI 2016 and ISO/IEC 17025:2017**.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	Montana	Cert 0035
Arizona	AZ0778	Nebraska	Certified
Arkansas	Certified	Nevada	CA000062018
California	2813	New Hampshire *	2959
Colorado	Certified	New Jersey *	CA 008
Connecticut	PH-0107	New Mexico	Certified
Delaware	CA 006	New York *	11320
Florida *	E871024	North Carolina	06701
Georgia	947	North Dakota	R-009
Guam	18-005R	Oregon *	CA200003-005
Hawaii	Certified	Pennsylvania *	68-565
Idaho	Certified	Puerto Rico	Certified
Illinois *	200033	Rhode Island	LAO00326
Indiana	C-CA-01	South Carolina	87016
Iowa - Asbestos	413	South Dakota	Certified
Kansas *	E-10268	Tennessee	TN02839
Kentucky	90107	Texas *	T104704230-18-15
Louisiana *	LA180000	Utah (Primary AB) *	CA00006
Maine	CA0006	Vermont	VT0114
Maryland	224	Virginia *	460260
Commonwealth of Northern Marianas Is.	MP0004	Washington	C838
Massachusetts	M-CA006	EPA Region 5	Certified
Michigan	9906	Los Angeles County Sanitation Districts	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, LLC
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
T | 626-386-1100
F | 866-988-3757
www.EurofinsUS.com/Eaton

The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **Honolulu Board of Water Supply**
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Attn: Erwin Kawata
Phone: 808-748-5091

Client ID: HONOLULU
Folder #: 929317
Project: CCR
Sample Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn
Project Manager: Debbie L Frank
Phone: (626) 386-1149
PO #: C20525101 exp 05312023

The following samples were received from you on **April 14, 2021 at 1541**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202104140804	HI0000331-241-TP401	04/13/2021 0948

SDWIS PWSID: HI0000331
SDWIS FACILITY ID: TP401
SDWIS SAMPLE POINT ID: 241
Static ID: HALAWA SHAFT

@ICP	@ICPMS	Mercury ICPMS
@533	@537.1	@UCMR3 200.8
Aluminum Total ICAP/MS	Chlorate by IC	Hexavalent Chromium
Zinc Total ICAP/MS		

Sample #	Sample ID	Sample Date
202104140805	FB::HI0000331-241-TP401	04/13/2021 0948

Static ID: HALAWA SHAFT

@533 FB_ANALYZE	@537.1 FB ANALYZE

Test Description

@ICP -- ICP Metals
@ICPMS -- ICPMS Metals
@533 -- EPA Method 533
@533 FB_ANALYZE -- EPA Method 533
@537.1 -- EPA Method 537.1
@537.1 FB ANALYZE -- EPA Method 537.1
@UCMR3 200.8 -- UCMR3 Metals

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CHAIN OF CUSTODY RECORD

929317

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

Phone: 626 386 1100
Fax: 626 386 1101

800 566 LABS (800 566 5227)

EUROFINS EATON ANALYTICAL USE ONLY:

LOGIN COMMENTS: _____

SAMPLES CHECKED AGAINST COC BY: _____

SAMPLES LOGGED IN BY: LD

SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

SAMPLE TEMP RECEIVED AT:

☐ Colton / No. California / Arizona _____ °C (Compliance: 4 ± 2 °C)

☑ Monrovia 2-8 °C (Compliance: 4 ± 2 °C)

CONDITION OF BLUE ICE: Frozen _____ Partially Frozen _____ Thawed _____ Wet Ice _____ No Ice _____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: _____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME:	PROJECT CODE:	COMPLIANCE SAMPLES (check for yes)	NON-COMPLIANCE SAMPLES (check for yes) X
BWS HONOLULU	CCR	- Requires state forms ☐	REGULATION INVOLVED:
		Type of samples (circle one): ROUTINE SPECIAL CONFIRMATION (eg. SDWA, Phase V, NPDES, FDA,...)	
EEA CLIENT CODE:	COC ID:	SAMPLE GROUP: Special Annual Metals	*SEE ATTACHED BOTTLE ORDER FOR ANALYSES* X (check for yes), *OR*
			list ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)

TAT requested: rush by adv notice only — STD X 1 wk ___ 3 day ___ 2 day ___ 1 day ___

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	FIELD DATA	FIELD DATA	Special Metals 2Q 2021	SAMPLER COMMENTS
04/13/21	0948	Halawa Shaft	HI0000331-241	CFW			X	
								Temp Blank: ____ °C

* **MATRIX TYPES:** **RSW** = Raw Surface Water; **RGW** = Raw Ground Water; **CFW** = Chlor(am)inated Finished Water; **FW** = Other Finished Water; **SEAW** = Sea Water; **WW** = Waste Water; **BW** = Bottled Water; **SW** = Storm Water; **SO** = Soil; **SL** = Sludge; **O** = Other - Please Identify

	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY: [redacted]	Lew Bailey	Honolulu Board of Water Supply	April 13, 2021	
RELINQUISHED BY:	Lew Bailey	Honolulu Board of Water Supply	4/13/2021	1400
RECEIVED BY:	FedEx Metro	EEA	4-14-21	15:41
RELINQUISHED BY:				
RECEIVED BY:				

PAGE 1 OF 1

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Kit Order for Honolulu Board of Water Supply

Debbie L Frank is your Eurofins Eaton Analytical, LLC Service Manager

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
(626) 386-1100 FAX (866) 988-3757

Created Date & Time: 3/26/2021 3:21:08AM

Note: Sampler Please return this paper with your samples

Kit #: 287077

Client ID: HONOLULU

Created By: Darius Smith - [DSM]
Deliver By: 03/31/2021
STG: Bottle Orders
Ice Type: G

Project Code: CCR Bottle Orders
Group Name: SPECIAL Annual Metals HI+UCMR3 200.8 ClO3, Cr6 + Al, Zn
PO#/JOB#: C20525101 exp 05312023
Description: No Schedule

Ship Sample Kits to
Honolulu Board of Water Supply
630 South Beretania Street
Chemistry Lab
Honolulu, HI 96843

Attn: Ron Fenstemacher
Phone: 808-748-5841
Fax: 808-550-5572

Send Report to
Honolulu Board of Water Supply
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Attn: Erwin Kawata
Phone: 808-748-5091
Fax: 808-550-5018

Billing Address
Honolulu Board of Water Supply
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Attn: Erwin Kawata
Phone: 808-748-5091
Fax: 808-550-5018

# of Sample	Tests	Bottle Qty - Type [preservative information]	Total	UN DOT #
48	Hexavalent Chromium	1 - 125ml poly [1.25 ml NH4SO4/NH4OH buffer]	48	
48	@533, @533 FB_ANALYZE	2 - 250 ml polypro w polypro cap [0.25g ammonium acetate]	96	
48	@533 TB	1 - 250 ml polypro w polypro cap [H2O]	48	
48	@537.1	2 - 275 ml polypro w polypro cap [1.4 g Trisma]	96	
48	@537 1 TB	1 - 275 ml polypro w polypro cap [1.4g Trisma + H2O]	48	
48	@537.1 FB ANALYZE	1 - 275 ml polypro w polypro cap [no preservative]	48	
48	@ICP, @ICPMS, Mercury ICPMS, @UCMR3 200.8, Aluminum Total ICAP/MS, Zinc Total ICAP/MS	1 - 500ml acid poly [2ml HNO3 (18%)]	48	UN2031
48	Chlorate by IC	1 - 60mL poly [0.3 mL 1% EDA solution]	48	

Sum Tests: 384

Sum Bottles: 480

Comments

Code	Status	Date Shipped	Via	Tracking #	# of Coolers	Prepared By

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INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 929317

SAMPLE TEMP RECEIVED:

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

SAMPLES REC'D DAY OF COLLECTION? Yes / No

IR Gun ID = 649A (Observation= 3.0 °C) (Corr.Factor -0.2 °C) (Final = 2.8 °C)

TYPE OF ICE: Real ____ Synthetic ✓ No Ice ____ CONDITION OF ICE: Frozen ✓ Partially Frozen ____ Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

Compliance Acceptance Criteria:

1) Chemistry: >0, ≤6°C, not frozen (NELAP) (If received after 24 hrs of sample collection)

2) Microbiology, Distribution: < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) Microbiology, Surface Water: < 10°C (If received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4 Dioxin (1613 or 2,3,7,8 TCDD): must be between 0-4 °C, not frozen (If received after 24 hrs of sample collection)

5) pH Check. Manufacturer: ____ Lot Number: ____ pH strip type: 0 - 14 or ____ Expiration Date ____ Results: ____

6) Chlorine check. Manufacturer: Sensafe. Lot No.: ____ Expiration Date: ____ Results ____

7) VOA and Radon Headspace: No Samples with Headspace: ☐ Samples with Headspace (see below): ☐

Headspace Documentation (use additional VOC and Radon Internal COFC for additional bottles)

Exempt from headspace concerns: Methods 515.4, HAA(6251,552), 505, SPME, @CH, 532LCMS, 556, 536, Analoxin, LCMS methods using 40 ml vials, International clients:

Samp ID	Bottle #	None/<6 mm	>6mm

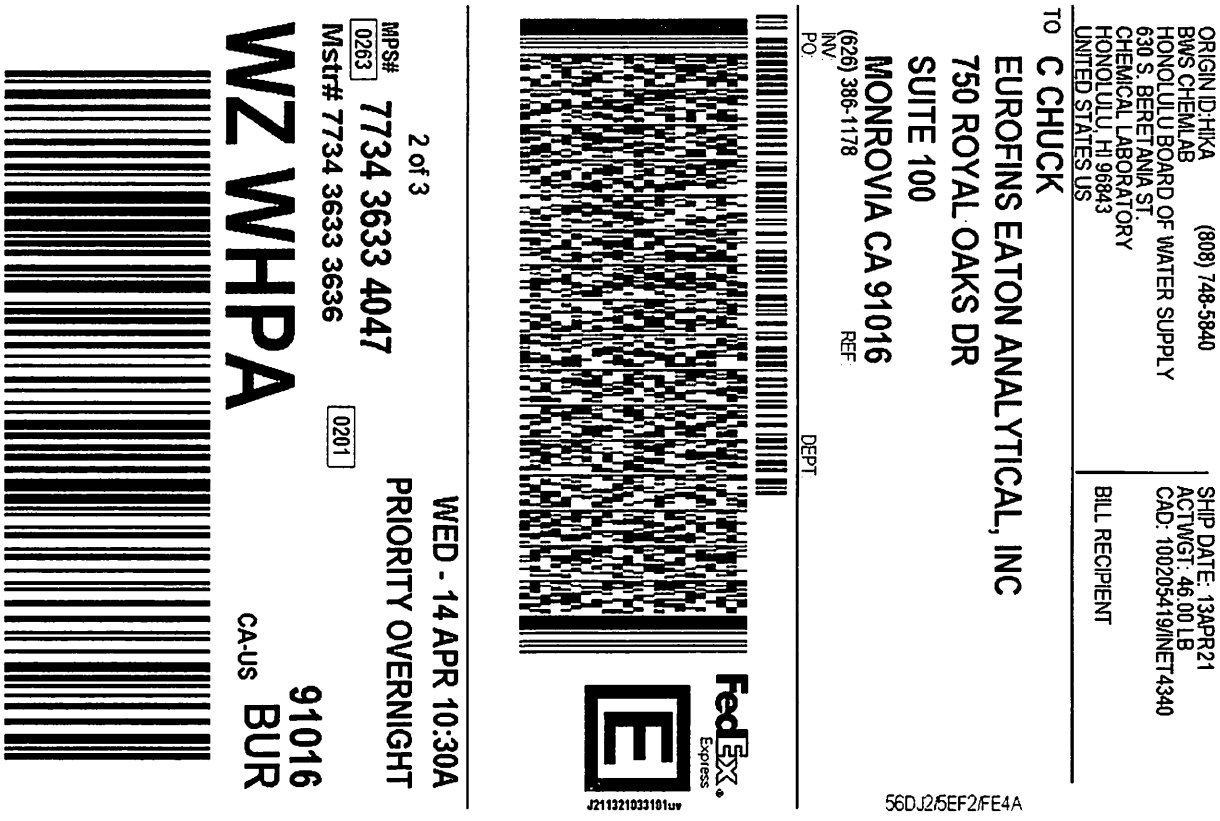
Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Note Sample IDs which have dissimilar headspace (i.e. potential sampling errors): ____

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:		Paul Marks	Eurofins Eaton Analytical	4-14-21	1541



After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Comments

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

The Comments Report may be blank if there are no comments for this report.

eurofins | Eaton Analytical

Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Hits

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
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Samples Received on:
04/14/2021 1541

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202104140804	**HI0000331-241-TP401**				
04/20/2021 18:20	Barium Total ICAP/MS		14	2000	ug/L	2.0
04/24/2021 08:27	Chlorate by IC		32		ug/L	10
04/23/2021 20:46	Chromium		1.3	100	ug/L	1.0
04/16/2021 20:50	Chromium Total ICAP/MS		1.5	100	ug/L	1.0
04/20/2021 18:20	Copper Total ICAP/MS		3.4	1300	ug/L	2.0
04/25/2021 13:23	Hexavalent Chromium		1.8		ug/L	0.020
04/20/2021 13:52	Sodium Total ICAP		36		mg/L	1.0
04/23/2021 20:24	Strontium		190		ug/L	0.30
04/23/2021 20:46	Vanadium		9.8		ug/L	1.0

SUMMARY OF POSITIVE DATA ONLY

eurofins | Eaton Analytical

Tel: (626) 386-1100
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Laboratory Data

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/14/2021 1541

HI0000331-241-TP401 (202104140804) — **Sampled on 04/13/2021 0948**

Facility ID: TP401
Sample Point ID: 241
PWSID: HI0000331
Static ID: HALAWA SHAFT

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
					EPA 200.8 - ICPMS Metals				
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Aluminum Total ICAP/MS	ND	ug/L	20	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Antimony Total ICAP/MS	ND	ug/L	1.0	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Arsenic Total ICAP/MS	ND	ug/L	1.0	1
04/15/21	04/20/21 18:20	1320992	1321882	(EPA 200.8)	Barium Total ICAP/MS	14	ug/L	2.0	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Beryllium Total ICAP/MS	ND	ug/L	1.0	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Cadmium Total ICAP/MS	ND	ug/L	0.50	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Chromium Total ICAP/MS	1.5	ug/L	1.0	1
04/15/21	04/20/21 18:20	1320992	1321882	(EPA 200.8)	Copper Total ICAP/MS	3.4	ug/L	2.0	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Lead Total ICAP/MS	ND	ug/L	0.50	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Nickel Total ICAP/MS	ND	ug/L	5.0	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Selenium Total ICAP/MS	ND	ug/L	5.0	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Thallium Total ICAP/MS	ND	ug/L	1.0	1
04/15/21	04/16/21 20:50	1320992	1321493	(EPA 200.8)	Zinc Total ICAP/MS	ND	ug/L	20	1
					EPA 200.7 - ICP Metals				
04/15/21	04/20/21 13:52	1320992	1321907	(EPA 200.7)	Sodium Total ICAP	36	mg/L	1.0	1
					UCMR 200.8 - UCMR3 Metals				
	04/23/21 20:46	1321137	1323107	(UCMR 200.8)	Chromium	1.3	ug/L	1.0	5
	04/23/21 20:46	1321137	1323107	(UCMR 200.8)	Cobalt	ND	ug/L	5.0	5
	04/23/21 20:24	1321137	1323107	(UCMR 200.8)	Molybdenum	ND	ug/L	1.0	1
	04/23/21 20:24	1321137	1323107	(UCMR 200.8)	Strontium	190	ug/L	0.30	1
	04/23/21 20:46	1321137	1323107	(UCMR 200.8)	Vanadium	9.8	ug/L	1.0	5
	04/23/21 20:24	1321137	1323107	(UCMR 200.8)	Indium (115)	100	%		1
	04/23/21 20:46	1321137	1323107	(UCMR 200.8)	Scandium (45)	103	%		1
					EPA 200.8 - Mercury ICPMS				
04/15/21	04/16/21 20:50	1320992	1321492	(EPA 200.8)	Mercury ICPMS	ND	ug/L	0.20	1
					EPA 300.0 - Disinfection ByProducts by 300.0				
	04/24/21 08:27		1322990	(EPA 300.0)	Chlorate by IC	32	ug/L	10	1
					EPA 218.7 - Hexavalent Chromium				
04/14/21	04/25/21 13:23	1321609	1322070	(EPA 218.7)	Hexavalent Chromium	1.8	ug/L	0.020	1
					EPA 537.1 - EPA Method 537.1				
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	ug/L	0.0020	1

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1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/14/2021 1541

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorobutanesulfonic acid (PFBS)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorodecanoic acid (PFDA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorododecanoic acid (PFDoA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluoroheptanoic acid (PFHpA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorohexanesulfonic acid (PFHxS)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorohexanoic acid (PFHxA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorononanoic acid (PFNA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorooctanesulfonic acid (PFOS)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorooctanoic acid (PFOA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorotetradecanoic acid (PFTA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluorotridecanoic acid (PFTrDA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	Perfluoroundecanoic acid (PFUnA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	13C2-PFDA	104	%		1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	13C2-PFHxA	105	%		1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	13C2-PFOA– IS#1	102	%		1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	13C3-HFPO-DA	106	%		1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	13C4-PFOS– IS#2	101	%		1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	d3-NMeFOSAA	100	%		1
04/20/21	04/22/21 02:37	1321921	1322551	(EPA 537.1)	d5-NEtFOSAA	104	%		1
		EPA 533 - EPA Method 533							
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	1H,1H,2H,2H-Perfluorodecane sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	1H,1H,2H,2H-Perfluorohexane sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	1H,1H,2H,2H-Perfluorooctane sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	ng/L	2.0	1

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200.8 ClO3, Cr6 + Al, Zn

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04/14/2021 1541

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Nonafluoro-3,6-dioxaheptanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluoro(2-ethoxyethane)sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluoro-3-methoxypropanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluoro-4-methoxybutanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorobutanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorobutanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorodecanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorododecanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluoroheptanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluoroheptanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorohexanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorohexanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorononanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorooctanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluorooctanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluoropentanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluoropentanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	Perfluoroundecanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C2-4:2FTS	100	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C2-6:2FTS	104	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C2-8:2FTS	91	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C2-PFDoA	74	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C2-PFOA	111	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C3-HFPO-DA	64	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C3-PFBA	108	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C3-PFBS	90	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C3-PFHxS	90	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C4-PFBA	74	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C4-PFHpA	70	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C4-PFOS	107	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C5-PFHxA	69	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C5-PFPeA	73	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C6-PFDA	73	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C7-PFUnA	71	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C8-PFOA	70	%		1
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C8-PFOS	91	%		1

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04/14/2021 1541

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
04/18/21	04/21/21 01:50	1321616	1322386	(EPA 533)	13C9-PFNA	71	%		1
FB::HI0000331-241-TP401 (202104140805)							**Sampled on 04/13/2021 0948**		
	Static ID: HALAWA SHAFT								
			EPA 537.1 - EPA Method 537.1						
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorobutanesulfonic acid (PFBS)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorodecanoic acid (PFDA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorododecanoic acid (PFDoA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluoroheptanoic acid (PFHpA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorohexanesulfonic acid (PFHxS)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorohexanoic acid (PFHxA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorononanoic acid (PFNA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorooctanesulfonic acid (PFOS)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorooctanoic acid (PFOA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorotetradecanoic acid (PFTA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluorotridecanoic acid (PFTrDA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	Perfluoroundecanoic acid (PFUnA)	ND	ug/L	0.0020	1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	13C2-PFDA	106	%		1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	13C2-PFHxA	103	%		1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	13C2-PFOA– IS#1	104	%		1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	13C3-HFPO-DA	104	%		1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	13C4-PFOS– IS#2	103	%		1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	d3-NMeFOSAA	100	%		1
04/20/21	04/22/21 02:46	1321921	1322551	(EPA 537.1)	d5-NEtFOSAA	107	%		1
			EPA 533 - EPA Method 533						
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	1H,1H,2H,2H-Perfluorodecane sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	1H,1H,2H,2H-Perfluorohexane sulfonic acid	ND	ng/L	2.0	1

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Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	1H,1H,2H,2H-Perfluorooctane sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Nonafluoro-3,6-dioxaheptanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluoro(2-ethoxyethane)sulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluoro-3-methoxypropanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluoro-4-methoxybutanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorobutanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorobutanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorodecanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorododecanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluoroheptanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluoroheptanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorohexanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorohexanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorononanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorooctanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluorooctanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluoropentanesulfonic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluoropentanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	Perfluoroundecanoic acid	ND	ng/L	2.0	1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C2-4:2FTS	94	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C2-6:2FTS	95	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C2-8:2FTS	85	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C2-PFDoA	76	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C2-PFOA	111	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C3-HFPO-DA	81	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C3-PFBA	106	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C3-PFBS	86	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C3-PFHxS	86	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C4-PFBA	87	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C4-PFHpA	85	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C4-PFOS	108	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C5-PFHxA	83	%		1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory Data

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/14/2021 1541

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C5-PFPeA	83	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C6-PFDA	83	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C7-PFUnA	81	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C8-PFOA	85	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C8-PFOS	89	%		1
04/18/21	04/21/21 02:00	1321616	1322386	(EPA 533)	13C9-PFNA	87	%		1

Rounding on totals after summation.
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Laboratory QC Summary

Report: 929317
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Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

Mercury ICPMS

Prep Batch: 1320992 **Analytical Batch: 1321492** **Analysis Date: 04/16/2021**

202104140804	HI0000331-241-TP401	Analyzed by: AZS

ICPMS Metals

Prep Batch: 1320992 **Analytical Batch: 1321493** **Analysis Date: 04/16/2021**

202104140804	HI0000331-241-TP401	Analyzed by: AZS

ICPMS Metals

Prep Batch: 1320992 **Analytical Batch: 1321882** **Analysis Date: 04/20/2021**

202104140804	HI0000331-241-TP401	Analyzed by: AZS

ICP Metals

Prep Batch: 1320992 **Analytical Batch: 1321907** **Analysis Date: 04/20/2021**

202104140804	HI0000331-241-TP401	Analyzed by: NINA

Hexavalent Chromium

Prep Batch: 1321609 **Analytical Batch: 1322070** **Analysis Date: 04/25/2021**

202104140804	HI0000331-241-TP401	Analyzed by: TLH

EPA Method 533

Prep Batch: 1321616 **Analytical Batch: 1322386** **Analysis Date: 04/21/2021**

202104140804	HI0000331-241-TP401	Analyzed by: KAM
202104140805	FB::HI0000331-241-TP401	Analyzed by: KAM

EPA Method 537.1

Prep Batch: 1321921 **Analytical Batch: 1322551** **Analysis Date: 04/22/2021**

202104140804	HI0000331-241-TP401	Analyzed by: KAM
202104140805	FB::HI0000331-241-TP401	Analyzed by: KAM

Disinfection ByProducts by 300.0

Analytical Batch: 1322990 **Analysis Date: 04/24/2021**

202104140804	HI0000331-241-TP401	Analyzed by: NJR

UCMR3 Metals

Prep Batch: 1321137 **Analytical Batch: 1323107** **Analysis Date: 04/23/2021**

202104140804	HI0000331-241-TP401	Analyzed by: AZS

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200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
Mercury ICPMS by EPA 200.8									
Analytical Batch: 1321492						**Analysis Date: 04/16/2021**			
LCS1	Mercury ICPMS		0.75	0.772	ug/L	103	(85-115)		
LCS2	Mercury ICPMS		0.75	0.753	ug/L	100	(85-115)	20	2.5
MBLK	Mercury ICPMS			<0.1	ug/L				
MRL_CHK	Mercury ICPMS		0.2	0.217	ug/L	109	(50-150)		
MS_202104140804	Mercury ICPMS	ND	0.75	0.768	ug/L	102	(70-130)		
MS2_202104150306	Mercury ICPMS	ND	0.75	0.726	ug/L	96	(70-130)		
MSD_202104140804	Mercury ICPMS	ND	0.75	0.746	ug/L	99	(70-130)	20	2.9
MSD2_202104150306	Mercury ICPMS	ND	0.75	0.722	ug/L	96	(70-130)	20	0.55
ICPMS Metals by EPA 200.8									
Analytical Batch: 1321493						**Analysis Date: 04/16/2021**			
LCS1	Aluminum Total ICAP/MS		100	101	ug/L	101	(85-115)		
LCS2	Aluminum Total ICAP/MS		100	102	ug/L	102	(85-115)	20	0.99
MBLK	Aluminum Total ICAP/MS			<6.67	ug/L				
MRL_CHK	Aluminum Total ICAP/MS		20	20.3	ug/L	102	(50-150)		
MS_202104140804	Aluminum Total ICAP/MS	ND	100	108	ug/L	106	(70-130)		
MS2_202104150306	Aluminum Total ICAP/MS	ND	100	106	ug/L	102	(70-130)		
MSD_202104140804	Aluminum Total ICAP/MS	ND	100	104	ug/L	103	(70-130)	20	2.4
MSD2_202104150306	Aluminum Total ICAP/MS	ND	100	107	ug/L	103	(70-130)	20	0.95
LCS1	Antimony Total ICAP/MS		50	50.5	ug/L	101	(85-115)		
LCS2	Antimony Total ICAP/MS		50	50.3	ug/L	101	(85-115)	20	0.40
MBLK	Antimony Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Antimony Total ICAP/MS		1	1.04	ug/L	103	(50-150)		
MS_202104140804	Antimony Total ICAP/MS	ND	50	54.0	ug/L	108	(70-130)		
MS2_202104150306	Antimony Total ICAP/MS	ND	50	51.4	ug/L	103	(70-130)		
MSD_202104140804	Antimony Total ICAP/MS	ND	50	53.0	ug/L	106	(70-130)	20	1.8
MSD2_202104150306	Antimony Total ICAP/MS	ND	50	52.1	ug/L	104	(70-130)	20	1.3
LCS1	Arsenic Total ICAP/MS		50	49.4	ug/L	99	(85-115)		
LCS2	Arsenic Total ICAP/MS		50	50.4	ug/L	101	(85-115)	20	2.0
MBLK	Arsenic Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Arsenic Total ICAP/MS		1	0.773	ug/L	77	(50-150)		
MS_202104140804	Arsenic Total ICAP/MS	ND	50	52.6	ug/L	105	(70-130)		
MS2_202104150306	Arsenic Total ICAP/MS	3.4	50	54.6	ug/L	102	(70-130)		
MSD_202104140804	Arsenic Total ICAP/MS	ND	50	51.2	ug/L	102	(70-130)	20	2.8
MSD2_202104150306	Arsenic Total ICAP/MS	3.4	50	54.4	ug/L	102	(70-130)	20	0.28
LCS1	Barium Total ICAP/MS		50	55.3	ug/L	111	(85-115)		

Spike recovery is already corrected for native results.
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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
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200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS2	Barium Total ICAP/MS		50	55.3	ug/L	111	(85-115)	20	0.0
MBLK	Barium Total ICAP/MS			0 333	ug/L				
MRL_CHK	Barium Total ICAP/MS		2	2.20	ug/L	110	(50-150)		
MS_202104140804	Barium Total ICAP/MS	14	50	72.9	ug/L	118	(70-130)		
MS2_202104150306	Barium Total ICAP/MS	98	50	156	ug/L	105	(70-130)		
MSD_202104140804	Barium Total ICAP/MS	14	50	71.3	ug/L	114	(70-130)	20	2.3
MSD2_202104150306	Barium Total ICAP/MS	98	50	158	ug/L	109	(70-130)	20	1.8
LCS1	Beryllium Total ICAP/MS		25	24.3	ug/L	97	(85-115)		
LCS2	Beryllium Total ICAP/MS		25	24.5	ug/L	98	(85-115)	20	0.82
MBLK	Beryllium Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Beryllium Total ICAP/MS		1	0.994	ug/L	99	(50-150)		
MS_202104140804	Beryllium Total ICAP/MS	ND	25	26.0	ug/L	104	(70-130)		
MS2_202104150306	Beryllium Total ICAP/MS	ND	25	26.0	ug/L	104	(70-130)		
MSD_202104140804	Beryllium Total ICAP/MS	ND	25	25.8	ug/L	103	(70-130)	20	0.67
MSD2_202104150306	Beryllium Total ICAP/MS	ND	25	26.7	ug/L	107	(70-130)	20	2.6
LCS1	Cadmium Total ICAP/MS		25	25.6	ug/L	102	(85-115)		
LCS2	Cadmium Total ICAP/MS		25	25.4	ug/L	102	(85-115)	20	0.78
MBLK	Cadmium Total ICAP/MS			<0.167	ug/L				
MRL_CHK	Cadmium Total ICAP/MS		0.5	0.532	ug/L	106	(50-150)		
MS_202104140804	Cadmium Total ICAP/MS	ND	25	26.7	ug/L	107	(70-130)		
MS2_202104150306	Cadmium Total ICAP/MS	ND	25	24.7	ug/L	99	(70-130)		
MSD_202104140804	Cadmium Total ICAP/MS	ND	25	26.2	ug/L	105	(70-130)	20	1.9
MSD2_202104150306	Cadmium Total ICAP/MS	ND	25	25.2	ug/L	101	(70-130)	20	2.0
LCS1	Chromium Total ICAP/MS		50	52.4	ug/L	105	(85-115)		
LCS2	Chromium Total ICAP/MS		50	52.1	ug/L	104	(85-115)	20	0.57
MBLK	Chromium Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Chromium Total ICAP/MS		1	0.835	ug/L	84	(50-150)		
MS_202104140804	Chromium Total ICAP/MS	1.5	50	53.1	ug/L	103	(70-130)		
MS2_202104150306	Chromium Total ICAP/MS	11	50	62.5	ug/L	103	(70-130)		
MSD_202104140804	Chromium Total ICAP/MS	1.5	50	53.8	ug/L	105	(70-130)	20	1.3
MSD2_202104150306	Chromium Total ICAP/MS	11	50	62.9	ug/L	104	(70-130)	20	0.69
LCS1	Copper Total ICAP/MS		50	56.2	ug/L	112	(85-115)		
LCS2	Copper Total ICAP/MS		50	56.5	ug/L	113	(85-115)	20	0.53
MBLK	Copper Total ICAP/MS			<0.667	ug/L				
MRL_CHK	Copper Total ICAP/MS		2	2.33	ug/L	116	(50-150)		
MS_202104140804	Copper Total ICAP/MS	3.4	50	58.3	ug/L	109	(70-130)		
MS2_202104150306	Copper Total ICAP/MS	ND	50	52.5	ug/L	104	(70-130)		
MSD_202104140804	Copper Total ICAP/MS	3.4	50	57.6	ug/L	108	(70-130)	20	1.2

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200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MSD2_202104150306	Copper Total ICAP/MS	ND	50	53.2	ug/L	105	(70-130)	20	1.2
LCS1	Lead Total ICAP/MS		50	49.8	ug/L	100	(85-115)		
LCS2	Lead Total ICAP/MS		50	49.8	ug/L	100	(85-115)	20	0.0
MBLK	Lead Total ICAP/MS			<0.167	ug/L				
MRL_CHK	Lead Total ICAP/MS		0.5	0.502	ug/L	100	(50-150)		
MS_202104140804	Lead Total ICAP/MS	ND	50	49.9	ug/L	100	(70-130)		
MS2_202104150306	Lead Total ICAP/MS	ND	50	46.7	ug/L	93	(70-130)		
MSD_202104140804	Lead Total ICAP/MS	ND	50	49.1	ug/L	98	(70-130)	20	1.6
MSD2_202104150306	Lead Total ICAP/MS	ND	50	47.0	ug/L	94	(70-130)	20	0.66
LCS1	Nickel Total ICAP/MS		50	48.6	ug/L	97	(85-115)		
LCS2	Nickel Total ICAP/MS		50	48.5	ug/L	97	(85-115)	20	0.21
MBLK	Nickel Total ICAP/MS			<1.67	ug/L				
MRL_CHK	Nickel Total ICAP/MS		5	4.80	ug/L	96	(50-150)		
MS_202104140804	Nickel Total ICAP/MS	ND	50	48.1	ug/L	96	(70-130)		
MS2_202104150306	Nickel Total ICAP/MS	ND	50	46.6	ug/L	92	(70-130)		
MSD_202104140804	Nickel Total ICAP/MS	ND	50	47.4	ug/L	95	(70-130)	20	1.4
MSD2_202104150306	Nickel Total ICAP/MS	ND	50	47.1	ug/L	93	(70-130)	20	1
LCS1	Selenium Total ICAP/MS		50	51.0	ug/L	102	(85-115)		
LCS2	Selenium Total ICAP/MS		50	51.3	ug/L	103	(85-115)	20	0.59
MBLK	Selenium Total ICAP/MS			<1.67	ug/L				
MRL_CHK	Selenium Total ICAP/MS		5	5.38	ug/L	108	(50-150)		
MS_202104140804	Selenium Total ICAP/MS	ND	50	55.5	ug/L	110	(70-130)		
MS2_202104150306	Selenium Total ICAP/MS	6.7	50	58.2	ug/L	103	(70-130)		
MSD_202104140804	Selenium Total ICAP/MS	ND	50	55.0	ug/L	109	(70-130)	20	0.93
MSD2_202104150306	Selenium Total ICAP/MS	6.7	50	58.8	ug/L	104	(70-130)	20	0.98
LCS1	Thallium Total ICAP/MS		50	50.9	ug/L	102	(85-115)		
LCS2	Thallium Total ICAP/MS		50	51.8	ug/L	104	(85-115)	20	1.8
MBLK	Thallium Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Thallium Total ICAP/MS		1	0.950	ug/L	95	(50-150)		
MS_202104140804	Thallium Total ICAP/MS	ND	50	48.3	ug/L	97	(70-130)		
MS2_202104150306	Thallium Total ICAP/MS	ND	50	44.8	ug/L	90	(70-130)		
MSD_202104140804	Thallium Total ICAP/MS	ND	50	48.0	ug/L	96	(70-130)	20	0.59
MSD2_202104150306	Thallium Total ICAP/MS	ND	50	45.7	ug/L	92	(70-130)	20	2.0
LCS1	Zinc Total ICAP/MS		50	45.6	ug/L	91	(85-115)		
LCS2	Zinc Total ICAP/MS		50	45.8	ug/L	92	(85-115)	20	0.44
MBLK	Zinc Total ICAP/MS			<6.67	ug/L				
MRL_CHK	Zinc Total ICAP/MS		20	21.2	ug/L	106	(50-150)		
MS_202104140804	Zinc Total ICAP/MS	ND	50	51.8	ug/L	104	(70-130)		

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Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MS2_202104150306	Zinc Total ICAP/MS	58	50	106	ug/L	96	(70-130)		
MSD_202104140804	Zinc Total ICAP/MS	ND	50	48.6	ug/L	97	(70-130)	20	6.5
MSD2_202104150306	Zinc Total ICAP/MS	58	50	107	ug/L	98	(70-130)	20	0.69

ICPMS Metals by EPA 200.8

Analytical Batch: 1321882 **Analysis Date: 04/20/2021**

LCS1	Aluminum Total ICAP/MS		100	101	ug/L	101	(85 115)		
LCS2	Aluminum Total ICAP/MS		100	104	ug/L	104	(85-115)	20	2.9
MBLK	Aluminum Total ICAP/MS			<6.67	ug/L				
MRL_CHK	Aluminum Total ICAP/MS		20	19.1	ug/L	96	(50-150)		
MS_202103290451	Aluminum Total ICAP/MS	ND	100	98.9	ug/L	99	(70-130)		
MS2_202104130706	Aluminum Total ICAP/MS	ND	100	88.3	ug/L	87	(70-130)		
MSD_202103290451	Aluminum Total ICAP/MS	ND	100	102	ug/L	102	(70-130)	20	3.1
MSD2_202104130706	Aluminum Total ICAP/MS	ND	100	109	ug/L	108	(70-130)	20	**21**
LCS1	Antimony Total ICAP/MS		50	48.8	ug/L	98	(85-115)		
LCS2	Antimony Total ICAP/MS		50	50.1	ug/L	100	(85-115)	20	2.6
MBLK	Antimony Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Antimony Total ICAP/MS		1	0.934	ug/L	93	(50-150)		
MS_202103290451	Antimony Total ICAP/MS	ND	50	48.2	ug/L	97	(70-130)		
MS2_202104130706	Antimony Total ICAP/MS	ND	50	41.8	ug/L	84	(70-130)		
MSD_202103290451	Antimony Total ICAP/MS	ND	50	50.1	ug/L	100	(70-130)	20	3.8
MSD2_202104130706	Antimony Total ICAP/MS	ND	50	52.7	ug/L	105	(70-130)	20	**23**
LCS1	Arsenic Total ICAP/MS		50	48.0	ug/L	96	(85-115)		
LCS2	Arsenic Total ICAP/MS		50	48.8	ug/L	98	(85-115)	20	1.6
MBLK	Arsenic Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Arsenic Total ICAP/MS		1	0.784	ug/L	78	(50-150)		
MS_202103290451	Arsenic Total ICAP/MS	ND	50	47.8	ug/L	96	(70-130)		
MS2_202104130706	Arsenic Total ICAP/MS	ND	50	42.9	ug/L	85	(70-130)		
MSD_202103290451	Arsenic Total ICAP/MS	ND	50	49.8	ug/L	100	(70-130)	20	4.1
MSD2_202104130706	Arsenic Total ICAP/MS	ND	50	53.1	ug/L	105	(70-130)	20	**21**
LCS1	Barium Total ICAP/MS		50	50.9	ug/L	102	(85-115)		
LCS2	Barium Total ICAP/MS		50	52 1	ug/L	104	(85 115)	20	2 3
MBLK	Barium Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Barium Total ICAP/MS		2	2.04	ug/L	102	(50-150)		
MS_202103290451	Barium Total ICAP/MS	14	50	61.8	ug/L	124	(70-130)		
MS2_202104130706	Barium Total ICAP/MS	20	50	64.0	ug/L	87	(70-130)		
MSD 202103290451	Barium Total ICAP/MS	14	50	64 1	ug/L	128	(70 130)	20	3 6
MSD2_202104130706	Barium Total ICAP/MS	20	50	77.7	ug/L	114	(70-130)	20	19

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Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS1	Beryllium Total ICAP/MS		25	23.5	ug/L	94	(85-115)		
LCS2	Beryllium Total ICAP/MS		25	23.9	ug/L	96	(85-115)	20	1.7
MBLK	Beryllium Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Beryllium Total ICAP/MS		1	0.970	ug/L	97	(50-150)		
MS_202103290451	Beryllium Total ICAP/MS	ND	25	23.5	ug/L	94	(70-130)		
MS2_202104130706	Beryllium Total ICAP/MS	ND	25	20.8	ug/L	83	(70-130)		
MSD_202103290451	Beryllium Total ICAP/MS	ND	25	24.3	ug/L	97	(70-130)	20	3.4
MSD2_202104130706	Beryllium Total ICAP/MS	ND	25	25.7	ug/L	103	(70-130)	20	**21**
LCS1	Cadmium Total ICAP/MS		25	25.4	ug/L	101	(85-115)		
LCS2	Cadmium Total ICAP/MS		25	25.6	ug/L	103	(85-115)	20	0.78
MBLK	Cadmium Total ICAP/MS			<0.167	ug/L				
MRL_CHK	Cadmium Total ICAP/MS		0.5	0.494	ug/L	99	(50-150)		
MS_202103290451	Cadmium Total ICAP/MS	ND	25	22.8	ug/L	91	(70-130)		
MS2_202104130706	Cadmium Total ICAP/MS	ND	25	21.1	ug/L	84	(70-130)		
MSD_202103290451	Cadmium Total ICAP/MS	ND	25	24.1	ug/L	97	(70-130)	20	5.3
MSD2_202104130706	Cadmium Total ICAP/MS	ND	25	26.5	ug/L	106	(70-130)	20	**23**
LCS1	Chromium Total ICAP/MS		50	50.9	ug/L	102	(85-115)		
LCS2	Chromium Total ICAP/MS		50	52.7	ug/L	105	(85-115)	20	3.5
MBLK	Chromium Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Chromium Total ICAP/MS		1	1.13	ug/L	113	(50-150)		
MS_202103290451	Chromium Total ICAP/MS	ND	50	48.5	ug/L	97	(70-130)		
MS2_202104130706	Chromium Total ICAP/MS	ND	50	42.8	ug/L	85	(70-130)		
MSD_202103290451	Chromium Total ICAP/MS	ND	50	49.7	ug/L	99	(70-130)	20	2.4
MSD2_202104130706	Chromium Total ICAP/MS	ND	50	53.4	ug/L	106	(70-130)	20	**22**
LCS1	Copper Total ICAP/MS		50	51.0	ug/L	102	(85-115)		
LCS2	Copper Total ICAP/MS		50	51.4	ug/L	103	(85-115)	20	0.78
MBLK	Copper Total ICAP/MS			<0.667	ug/L				
MRL_CHK	Copper Total ICAP/MS		2	2.10	ug/L	105	(50-150)		
MS_202103290451	Copper Total ICAP/MS	2.1	50	47.0	ug/L	94	(70-130)		
MS2_202104130706	Copper Total ICAP/MS	19	50	60.5	ug/L	82	(70-130)		
MSD_202103290451	Copper Total ICAP/MS	2.1	50	48.9	ug/L	98	(70-130)	20	3.9
MSD2_202104130706	Copper Total ICAP/MS	19	50	72.2	ug/L	106	(70-130)	20	18
LCS1	Lead Total ICAP/MS		50	50.9	ug/L	102	(85-115)		
LCS2	Lead Total ICAP/MS		50	51.3	ug/L	103	(85-115)	20	0.78
MBLK	Lead Total ICAP/MS			<0.167	ug/L				
MRL_CHK	Lead Total ICAP/MS		0.5	0.485	ug/L	97	(50-150)		
MS_202103290451	Lead Total ICAP/MS	ND	50	41.7	ug/L	83	(70-130)		
MS2_202104130706	Lead Total ICAP/MS	ND	50	41.9	ug/L	84	(70-130)		

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Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MSD_202103290451	Lead Total ICAP/MS	ND	50	45.6	ug/L	91	(70-130)	20	8.9
MSD2_202104130706	Lead Total ICAP/MS	ND	50	51.8	ug/L	104	(70-130)	20	**21**
LCS1	Nickel Total ICAP/MS		50	50.6	ug/L	101	(85-115)		
LCS2	Nickel Total ICAP/MS		50	50.6	ug/L	101	(85-115)	20	0.0
MBLK	Nickel Total ICAP/MS			<1.67	ug/L				
MRL_CHK	Nickel Total ICAP/MS		5	5.03	ug/L	101	(50-150)		
MS_202103290451	Nickel Total ICAP/MS	ND	50	46.4	ug/L	93	(70-130)		
MS2_202104130706	Nickel Total ICAP/MS	ND	50	41.8	ug/L	83	(70-130)		
MSD_202103290451	Nickel Total ICAP/MS	ND	50	48.3	ug/L	97	(70-130)	20	4.0
MSD2_202104130706	Nickel Total ICAP/MS	ND	50	51.9	ug/L	103	(70-130)	20	**22**
LCS1	Selenium Total ICAP/MS		50	50.1	ug/L	100	(85-115)		
LCS2	Selenium Total ICAP/MS		50	49.5	ug/L	99	(85-115)	20	1.2
MBLK	Selenium Total ICAP/MS			<1.67	ug/L				
MRL_CHK	Selenium Total ICAP/MS		5	4.99	ug/L	100	(50-150)		
MS_202103290451	Selenium Total ICAP/MS	5.9	50	54.0	ug/L	108	(70-130)		
MS2_202104130706	Selenium Total ICAP/MS	ND	50	46.7	ug/L	92	(70-130)		
MSD_202103290451	Selenium Total ICAP/MS	5.9	50	56.0	ug/L	112	(70-130)	20	3.6
MSD2_202104130706	Selenium Total ICAP/MS	ND	50	56.8	ug/L	112	(70-130)	20	20
LCS1	Thallium Total ICAP/MS		50	53.0	ug/L	106	(85-115)		
LCS2	Thallium Total ICAP/MS		50	53.4	ug/L	107	(85-115)	20	0.75
MBLK	Thallium Total ICAP/MS			<0.333	ug/L				
MRL_CHK	Thallium Total ICAP/MS		1	0.858	ug/L	86	(50-150)		
MS_202103290451	Thallium Total ICAP/MS	ND	50	47.0	ug/L	94	(70-130)		
MS2_202104130706	Thallium Total ICAP/MS	ND	50	46.4	ug/L	93	(70-130)		
MSD_202103290451	Thallium Total ICAP/MS	ND	50	49.3	ug/L	99	(70-130)	20	4.7
MSD2_202104130706	Thallium Total ICAP/MS	ND	50	55.6	ug/L	111	(70-130)	20	18
LCS1	Zinc Total ICAP/MS		50	48.7	ug/L	98	(85-115)		
LCS2	Zinc Total ICAP/MS		50	49.3	ug/L	99	(85-115)	20	1.2
MBLK	Zinc Total ICAP/MS			<6.67	ug/L				
MRL_CHK	Zinc Total ICAP/MS		20	19.8	ug/L	99	(50-150)		
MS_202103290451	Zinc Total ICAP/MS	ND	50	48.6	ug/L	93	(70-130)		
MS2_202104130706	Zinc Total ICAP/MS	ND	50	50.8	ug/L	96	(70-130)		
MSD_202103290451	Zinc Total ICAP/MS	ND	50	48.6	ug/L	93	(70-130)	20	0.082
MSD2_202104130706	Zinc Total ICAP/MS	ND	50	55.9	ug/L	106	(70-130)	20	9.6

ICP Metals by EPA 200.7

Analytical Batch: 1321907 **Analysis Date: 04/20/2021**

LCS1	Sodium Total ICAP		50	49.7	mg/L	100	(85-115)		

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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS2	Sodium Total ICAP		50	49.7	mg/L	100	(85-115)	20	0.0
MBLK	Sodium Total ICAP			<0.4255	mg/L				
MRL_CHK	Sodium Total ICAP		1	1.08	mg/L	108	(50-150)		
MS_202104150761	Sodium Total ICAP	ND	50	45.3	mg/L	89	(70-130)		
MS2_202104151112	Sodium Total ICAP	ND	50	46.6	mg/L	92	(70-130)		
MSD_202104150761	Sodium Total ICAP	ND	50	46.3	mg/L	91	(70-130)	20	2.1
MSD2_202104151112	Sodium Total ICAP	ND	50	46.2	mg/L	91	(70-130)	20	0.80
Hexavalent Chromium by EPA 218.7									
Analytical Batch: 1322070						**Analysis Date: 04/25/2021**			
LCS1	Hexavalent Chromium		2	1.91	ug/L	95	(90-110)		
LCS2	Hexavalent Chromium		2	1.91	ug/L	96	(90-110)	20	0.0
MBLK	Hexavalent Chromium			<0.007	ug/L				
MRL_CHK	Hexavalent Chromium		0.02	0.0186	ug/L	93	(50-150)		
MS_202104140036	Hexavalent Chromium	4.4	2	6.34	ug/L	98	(90-110)		
MS_202104151031	Hexavalent Chromium	0.080	2	2.11	ug/L	101	(90-110)		
MSD_202104140036	Hexavalent Chromium	4.4	2	6.37	ug/L	100	(90-110)	20	0.51
MSD_202104151031	Hexavalent Chromium	0.080	2	2.10	ug/L	101	(90-110)	20	0.45
EPA Method 533 by EPA 533									
Prep Batch: 1321616 Analytical Batch: 1322386						**Analysis Date: 04/20/2021**			
DUP_202104150646	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND		ND	ng/L		(0-30)		
LCS3	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		60	61.9	ng/L	103	(70-130)		
LCS4	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		60	60.4	ng/L	101	(70-130)	30	2.5
MBLK	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid			<0.667	ng/L				
MRL_CHK	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		2	2.18	ng/L	109	(50-150)		
MS2_202104160074	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	60	62.4	ng/L	104	(70-130)		
DUP_202104150646	13C2-4:2FTS	98		95.9	%	96	(50-200)		
LCS3	13C2-4:2FTS			90.9	%	91	(50-200)		
LCS4	13C2-4:2FTS			96.7	%	97	(50-200)		
MBLK	13C2-4:2FTS			99.5	%				
MRL_CHK	13C2-4:2FTS			96.9	%	97	(50-200)		
MS2_202104160074	13C2-4:2FTS	118		122	%	123	(50-200)		
DUP_202104150646	13C2-6:2FTS	95		98.5	%	98	(50-200)		
LCS3	13C2-6:2FTS			94.0	%	94	(50-200)		
LCS4	13C2-6:2FTS			96.6	%	97	(50-200)		
MBLK	13C2-6:2FTS			105	%				
MRL_CHK	13C2-6:2FTS			96.7	%	97	(50-200)		
MS2_202104160074	13C2-6:2FTS	109		105	%	105	(50-200)		

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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
DUP_202104150646	13C2-8:2FTS	90		95.7	%	96	(50-200)		
LCS3	13C2-8:2FTS			86.4	%	86	(50-200)		
LCS4	13C2-8:2FTS			87.2	%	87	(50-200)		
MBLK	13C2-8:2FTS			88.2	%				
MRL_CHK	13C2-8:2FTS			87.6	%	88	(50-200)		
MS2_202104160074	13C2-8:2FTS	89		95.0	%	95	(50-200)		
DUP_202104150646	13C2-PFDoA	81		80.5	%	81	(50-200)		
LCS3	13C2-PFDoA			75.7	%	76	(50-200)		
LCS4	13C2-PFDoA			86.9	%	87	(50-200)		
MBLK	13C2-PFDoA			85.8	%				
MRL_CHK	13C2-PFDoA			80.7	%	81	(50-200)		
MS2_202104160074	13C2-PFDoA	80		77.3	%	77	(50-200)		
DUP_202104150646	13C2-PFOA	110		110	%	110	(50-150)		
LCS3	13C2-PFOA			105	%	105	(50-150)		
LCS4	13C2-PFOA			108	%	109	(50-150)		
MBLK	13C2-PFOA			106	%				
MRL_CHK	13C2-PFOA			112	%	112	(50-150)		
MS2_202104160074	13C2-PFOA	112		107	%	107	(50-150)		
DUP_202104150646	13C3-HFPO-DA	79		74.1	%	74	(50-200)		
LCS3	13C3-HFPO-DA			81.9	%	82	(50-200)		
LCS4	13C3-HFPO-DA			89.6	%	90	(50-200)		
MBLK	13C3-HFPO-DA			88.8	%				
MRL_CHK	13C3-HFPO-DA			81.3	%	81	(50-200)		
MS2_202104160074	13C3-HFPO-DA	84		85.6	%	86	(50-200)		
DUP_202104150646	13C3-PFBA	104		103	%	103	(50-150)		
LCS3	13C3-PFBA			106	%	106	(50-150)		
LCS4	13C3-PFBA			108	%	108	(50-150)		
MBLK	13C3-PFBA			106	%				
MRL_CHK	13C3-PFBA			106	%	107	(50-150)		
MS2_202104160074	13C3-PFBA	76		70.5	%	71	(50-150)		
DUP_202104150646	13C3-PFBS	89		85.2	%	85	(50-200)		
LCS3	13C3-PFBS			90.4	%	90	(50-200)		
LCS4	13C3-PFBS			92.2	%	92	(50-200)		
MBLK	13C3-PFBS			92.4	%				
MRL_CHK	13C3-PFBS			92.3	%	92	(50-200)		
MS2_202104160074	13C3-PFBS	89		87.8	%	88	(50-200)		
DUP_202104150646	13C3-PFHxS	89		86.2	%	86	(50-200)		
LCS3	13C3-PFHxS			91.7	%	92	(50-200)		

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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS4	13C3-PFHxS			90.6	%	91	(50-200)		
MBLK	13C3-PFHxS			92.0	%				
MRL_CHK	13C3-PFHxS			91.9	%	92	(50-200)		
MS2_202104160074	13C3-PFHxS	92		92.5	%	92	(50-200)		
DUP_202104150646	13C4-PFBA	88		82.2	%	82	(50-200)		
LCS3	13C4-PFBA			81.0	%	81	(50-200)		
LCS4	13C4-PFBA			90.6	%	91	(50-200)		
MBLK	13C4-PFBA			93.6	%				
MRL_CHK	13C4-PFBA			87.1	%	87	(50-200)		
MS2_202104160074	13C4-PFBA	92		91.3	%	91	(50-200)		
DUP_202104150646	13C4-PFHpA	81		82.9	%	83	(50-200)		
LCS3	13C4-PFHpA			83.0	%	83	(50-200)		
LCS4	13C4-PFHpA			91.6	%	92	(50-200)		
MBLK	13C4-PFHpA			95.1	%				
MRL_CHK	13C4-PFHpA			85.8	%	86	(50-200)		
MS2_202104160074	13C4-PFHpA	92		86.7	%	87	(50-200)		
DUP_202104150646	13C4-PFOS	109		108	%	108	(50-150)		
LCS3	13C4-PFOS			106	%	106	(50-150)		
LCS4	13C4-PFOS			106	%	106	(50-150)		
MBLK	13C4-PFOS			106	%				
MRL_CHK	13C4-PFOS			107	%	107	(50-150)		
MS2_202104160074	13C4-PFOS	106		104	%	104	(50-150)		
DUP_202104150646	13C5-PFHxA	81		79.6	%	80	(50-200)		
LCS3	13C5-PFHxA			80.8	%	81	(50-200)		
LCS4	13C5-PFHxA			89.8	%	90	(50-200)		
MBLK	13C5-PFHxA			89.3	%				
MRL_CHK	13C5-PFHxA			85.0	%	85	(50-200)		
MS2_202104160074	13C5-PFHxA	87		85.8	%	86	(50-200)		
DUP_202104150646	13C5-PFPeA	87		85.3	%	85	(50-200)		
LCS3	13C5-PFPeA			81.6	%	82	(50-200)		
LCS4	13C5-PFPeA			89.4	%	89	(50-200)		
MBLK	13C5-PFPeA			92.0	%				
MRL_CHK	13C5-PFPeA			88.0	%	88	(50-200)		
MS2_202104160074	13C5-PFPeA	120		127	%	127	(50-200)		
DUP_202104150646	13C6-PFDA	79		83.8	%	84	(50-200)		
LCS3	13C6-PFDA			80.8	%	81	(50-200)		
LCS4	13C6-PFDA			88.1	%	88	(50-200)		
MBLK	13C6-PFDA			91.5	%				

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MRL_CHK	13C6-PFDA			79.5	%	80	(50-200)		
MS2_202104160074	13C6-PFDA	85		87.6	%	88	(50-200)		
DUP_202104150646	13C7-PFUnA	76		78.7	%	79	(50-200)		
LCS3	13C7-PFUnA			74.0	%	74	(50-200)		
LCS4	13C7-PFUnA			85.7	%	86	(50-200)		
MBLK	13C7-PFUnA			85.9	%				
MRL_CHK	13C7-PFUnA			82.0	%	82	(50-200)		
MS2_202104160074	13C7-PFUnA	81		77.8	%	78	(50-200)		
DUP_202104150646	13C8-PFOA	81		83.6	%	84	(50-200)		
LCS3	13C8-PFOA			80.8	%	81	(50-200)		
LCS4	13C8-PFOA			90.2	%	90	(50-200)		
MBLK	13C8-PFOA			92.5	%				
MRL_CHK	13C8-PFOA			84.3	%	84	(50-200)		
MS2_202104160074	13C8-PFOA	91		86.8	%	87	(50-200)		
DUP_202104150646	13C8-PFOS	87		84.9	%	85	(50-200)		
LCS3	13C8-PFOS			89.0	%	89	(50-200)		
LCS4	13C8-PFOS			93.1	%	93	(50-200)		
MBLK	13C8-PFOS			92.5	%				
MRL_CHK	13C8-PFOS			92.0	%	92	(50-200)		
MS2_202104160074	13C8-PFOS	90		93.8	%	94	(50-200)		
DUP_202104150646	13C9-PFNA	78		80.1	%	80	(50-200)		
LCS3	13C9-PFNA			78.7	%	79	(50-200)		
LCS4	13C9-PFNA			90.8	%	91	(50-200)		
MBLK	13C9-PFNA			93.7	%				
MRL_CHK	13C9-PFNA			83.2	%	83	(50-200)		
MS2_202104160074	13C9-PFNA	86		82.4	%	82	(50-200)		
DUP_202104150646	1H,1H,2H,2H-Perfluorodecane sulfonic acid	ND		ND	ng/L		(0-30)		
LCS3	1H,1H,2H,2H-Perfluorodecane sulfonic acid		60	64.3	ng/L	107	(70-130)		
LCS4	1H,1H,2H,2H-Perfluorodecane sulfonic acid		60	64.7	ng/L	108	(70-130)	30	0.62
MBLK	1H,1H,2H,2H-Perfluorodecane sulfonic acid			<0.667	ng/L				
MRL_CHK	1H,1H,2H,2H-Perfluorodecane sulfonic acid		2	2.55	ng/L	127	(50-150)		
MS2_202104160074	1H,1H,2H,2H-Perfluorodecane sulfonic acid	ND	60	64.2	ng/L	107	(70-130)		
DUP_202104150646	1H,1H,2H,2H-Perfluorohexane sulfonic acid	ND		ND	ng/L		(0-30)		
LCS3	1H,1H,2H,2H-Perfluorohexane sulfonic acid		60	62.5	ng/L	104	(70-130)		
LCS4	1H,1H,2H,2H-Perfluorohexane sulfonic acid		60	61.0	ng/L	102	(70-130)	30	2.4
MBLK	1H,1H,2H,2H-Perfluorohexane sulfonic acid			<0.667	ng/L				
MRL_CHK	1H,1H,2H,2H-Perfluorohexane sulfonic acid		2	2.42	ng/L	121	(50-150)		
MS2_202104160074	1H,1H,2H,2H-Perfluorohexane sulfonic acid	ND	60	61.1	ng/L	102	(70-130)		

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(S) - Indicates surrogate compound.
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Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
DUP_202104150646	1H,1H,2H,2H-Perfluorooctane sulfonic acid	ND		ND	ng/L		(0-30)		
LCS3	1H,1H,2H,2H-Perfluorooctane sulfonic acid		60	63.0	ng/L	105	(70-130)		
LCS4	1H,1H,2H,2H-Perfluorooctane sulfonic acid		60	62.7	ng/L	105	(70-130)	30	0.64
MBLK	1H,1H,2H,2H-Perfluorooctane sulfonic acid			<0.667	ng/L				
MRL_CHK	1H,1H,2H,2H-Perfluorooctane sulfonic acid		2	2.43	ng/L	121	(50-150)		
MS2_202104160074	1H,1H,2H,2H-Perfluorooctane sulfonic acid	ND	60	63.7	ng/L	106	(70-130)		
DUP_202104150646	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND		ND	ng/L		(0-30)		
LCS3	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		60	61.7	ng/L	103	(70-130)		
LCS4	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		60	62.1	ng/L	104	(70-130)	30	0.65
MBLK	4,8-dioxa-3H-perfluorononanoic acid (ADONA)			<0.667	ng/L				
MRL_CHK	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		2	2.23	ng/L	112	(50-150)		
MS2_202104160074	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	60	64.4	ng/L	107	(70-130)		
DUP_202104150646	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND		ND	ng/L		(0-30)		
LCS3	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		60	63.3	ng/L	105	(70-130)		
LCS4	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		60	63.0	ng/L	105	(70-130)	30	0.32
MBLK	9-chlorohexadecafluoro-3-oxanone-sulfonic acid			<0.667	ng/L				
MRL_CHK	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		2	2.33	ng/L	116	(50-150)		
MS2_202104160074	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	60	61.8	ng/L	103	(70-130)		
DUP_202104150646	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND		ND	ng/L		(0-30)		
LCS3	Hexafluoropropylene oxide dimer acid (HFPO-DA)		60	62.7	ng/L	104	(70-130)		
LCS4	Hexafluoropropylene oxide dimer acid (HFPO-DA)		60	63.7	ng/L	106	(70-130)	30	1.6
MBLK	Hexafluoropropylene oxide dimer acid (HFPO-DA)			<0.667	ng/L				
MRL_CHK	Hexafluoropropylene oxide dimer acid (HFPO-DA)		2	2.43	ng/L	122	(50-150)		
MS2_202104160074	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	60	64.9	ng/L	108	(70-130)		
DUP_202104150646	Nonafluoro-3,6-dioxaheptanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Nonafluoro-3,6-dioxaheptanoic acid		60	61.8	ng/L	103	(70-130)		
LCS4	Nonafluoro-3,6-dioxaheptanoic acid		60	59.5	ng/L	99	(70-130)	30	3.8
MBLK	Nonafluoro-3,6-dioxaheptanoic acid			<0.667	ng/L				
MRL_CHK	Nonafluoro-3,6-dioxaheptanoic acid		2	2.50	ng/L	125	(50-150)		
MS2_202104160074	Nonafluoro-3,6-dioxaheptanoic acid	ND	60	66.3	ng/L	110	(70-130)		
DUP_202104150646	Perfluoro(2-ethoxyethane)sulfonic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluoro(2-ethoxyethane)sulfonic acid		60	63.4	ng/L	106	(70-130)		
LCS4	Perfluoro(2-ethoxyethane)sulfonic acid		60	64.1	ng/L	107	(70-130)	30	1.1
MBLK	Perfluoro(2-ethoxyethane)sulfonic acid			<0.667	ng/L				
MRL_CHK	Perfluoro(2-ethoxyethane)sulfonic acid		2	2.34	ng/L	117	(50-150)		
MS2_202104160074	Perfluoro(2-ethoxyethane)sulfonic acid	ND	60	65.4	ng/L	109	(70-130)		
DUP_202104150646	Perfluoro-3-methoxypropanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluoro-3-methoxypropanoic acid		60	62.5	ng/L	104	(70-130)		

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200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS4	Perfluoro-3-methoxypropanoic acid		60	63.7	ng/L	106	(70-130)	30	1.9
MBLK	Perfluoro-3-methoxypropanoic acid			<0.667	ng/L				
MRL_CHK	Perfluoro-3-methoxypropanoic acid		2	2.34	ng/L	117	(50-150)		
MS2_202104160074	Perfluoro-3-methoxypropanoic acid	ND	60	79.3	ng/L	**132**	(70-130)		
DUP_202104150646	Perfluoro-4-methoxybutanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluoro-4-methoxybutanoic acid		60	61.6	ng/L	103	(70-130)		
LCS4	Perfluoro-4-methoxybutanoic acid		60	63.9	ng/L	106	(70-130)	30	3.7
MBLK	Perfluoro-4-methoxybutanoic acid			<0.667	ng/L				
MRL_CHK	Perfluoro-4-methoxybutanoic acid		2	2.35	ng/L	118	(50-150)		
MS2_202104160074	Perfluoro-4-methoxybutanoic acid	ND	60	64.1	ng/L	107	(70-130)		
DUP_202104150646	Perfluorobutanesulfonic acid	3.3		3.05	ng/L		(0-30)		
LCS3	Perfluorobutanesulfonic acid		60	62.5	ng/L	104	(70-130)		
LCS4	Perfluorobutanesulfonic acid		60	63.8	ng/L	106	(70-130)	30	2.1
MBLK	Perfluorobutanesulfonic acid			<0.667	ng/L				
MRL_CHK	Perfluorobutanesulfonic acid		2	2.41	ng/L	121	(50-150)		
MS2_202104160074	Perfluorobutanesulfonic acid	12	60	77.8	ng/L	109	(70-130)		
DUP_202104150646	Perfluorobutanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluorobutanoic acid		60	62.7	ng/L	105	(70-130)		
LCS4	Perfluorobutanoic acid		60	63.9	ng/L	106	(70-130)	30	1.9
MBLK	Perfluorobutanoic acid			<0.667	ng/L				
MRL_CHK	Perfluorobutanoic acid		2	2.48	ng/L	124	(50-150)		
MS2_202104160074	Perfluorobutanoic acid	15	60	79.2	ng/L	106	(70-130)		
DUP_202104150646	Perfluorodecanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluorodecanoic acid		60	63.4	ng/L	106	(70-130)		
LCS4	Perfluorodecanoic acid		60	63.1	ng/L	105	(70-130)	30	0.47
MBLK	Perfluorodecanoic acid			<0.667	ng/L				
MRL_CHK	Perfluorodecanoic acid		2	2.51	ng/L	125	(50-150)		
MS2_202104160074	Perfluorodecanoic acid	ND	60	63.0	ng/L	105	(70-130)		
DUP_202104150646	Perfluorododecanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluorododecanoic acid		60	65.9	ng/L	110	(70-130)		
LCS4	Perfluorododecanoic acid		60	63.8	ng/L	106	(70-130)	30	3.1
MBLK	Perfluorododecanoic acid			<0.667	ng/L				
MRL_CHK	Perfluorododecanoic acid		2	2.36	ng/L	118	(50-150)		
MS2_202104160074	Perfluorododecanoic acid	ND	60	68.1	ng/L	113	(70-130)		
DUP_202104150646	Perfluoroheptanesulfonic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluoroheptanesulfonic acid		60	64.6	ng/L	108	(70-130)		
LCS4	Perfluoroheptanesulfonic acid		60	63.4	ng/L	106	(70-130)	30	1.9
MBLK	Perfluoroheptanesulfonic acid			<0.667	ng/L				

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RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MRL_CHK	Perfluoroheptanesulfonic acid		2	2.40	ng/L	120	(50-150)		
MS2_202104160074	Perfluoroheptanesulfonic acid	ND	60	64.9	ng/L	107	(70-130)		
DUP_202104150646	Perfluoroheptanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluoroheptanoic acid		60	63.6	ng/L	106	(70-130)		
LCS4	Perfluoroheptanoic acid		60	63.3	ng/L	106	(70-130)	30	0.47
MBLK	Perfluoroheptanoic acid			<0.667	ng/L				
MRL_CHK	Perfluoroheptanoic acid		2	2.32	ng/L	116	(50-150)		
MS2_202104160074	Perfluoroheptanoic acid	ND	60	68.7	ng/L	112	(70-130)		
DUP_202104150646	Perfluorohexanesulfonic acid	6.4		6.34	ng/L		(0-30)	30	0.089
LCS3	Perfluorohexanesulfonic acid		60	63.0	ng/L	105	(70-130)		
LCS4	Perfluorohexanesulfonic acid		60	64.1	ng/L	107	(70-130)	30	1.7
MBLK	Perfluorohexanesulfonic acid			<0.667	ng/L				
MRL_CHK	Perfluorohexanesulfonic acid		2	2.32	ng/L	116	(50-150)		
MS2_202104160074	Perfluorohexanesulfonic acid	8.3	60	72.9	ng/L	108	(70-130)		
DUP_202104150646	Perfluorohexanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluorohexanoic acid		60	63.8	ng/L	106	(70-130)		
LCS4	Perfluorohexanoic acid		60	63.6	ng/L	106	(70-130)	30	0.31
MBLK	Perfluorohexanoic acid			<0.667	ng/L				
MRL_CHK	Perfluorohexanoic acid		2	2.38	ng/L	119	(50-150)		
MS2_202104160074	Perfluorohexanoic acid	3.3	60	67.0	ng/L	106	(70-130)		
DUP_202104150646	Perfluorononanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluorononanoic acid		60	64.7	ng/L	108	(70-130)		
LCS4	Perfluorononanoic acid		60	62.4	ng/L	104	(70-130)	30	3.6
MBLK	Perfluorononanoic acid			<0.667	ng/L				
MRL_CHK	Perfluorononanoic acid		2	2.45	ng/L	123	(50-150)		
MS2_202104160074	Perfluorononanoic acid	5.2	60	69.9	ng/L	108	(70-130)		
DUP_202104150646	Perfluorooctanesulfonic acid	6.8		6.73	ng/L		(0-30)	30	1.5
LCS3	Perfluorooctanesulfonic acid		60	64.2	ng/L	107	(70-130)		
LCS4	Perfluorooctanesulfonic acid		60	64.6	ng/L	108	(70-130)	30	0.62
MBLK	Perfluorooctanesulfonic acid			<0.667	ng/L				
MRL_CHK	Perfluorooctanesulfonic acid		2	2.40	ng/L	120	(50-150)		
MS2_202104160074	Perfluorooctanesulfonic acid	38	60	101	ng/L	105	(70-130)		
DUP_202104150646	Perfluorooctanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluorooctanoic acid		60	63.6	ng/L	106	(70-130)		
LCS4	Perfluorooctanoic acid		60	66.7	ng/L	111	(70-130)	30	4.8
MBLK	Perfluorooctanoic acid			<0.667	ng/L				
MRL_CHK	Perfluorooctanoic acid		2	2.67	ng/L	134	(50-150)		
MS2_202104160074	Perfluorooctanoic acid	13	60	80.0	ng/L	111	(70-130)		

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Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
DUP_202104150646	Perfluoropentanesulfonic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluoropentanesulfonic acid		60	63.0	ng/L	105	(70-130)		
LCS4	Perfluoropentanesulfonic acid		60	63.8	ng/L	106	(70-130)	30	1.3
MBLK	Perfluoropentanesulfonic acid			<0.667	ng/L				
MRL_CHK	Perfluoropentanesulfonic acid		2	2.40	ng/L	120	(50-150)		
MS2_202104160074	Perfluoropentanesulfonic acid	ND	60	65.4	ng/L	107	(70-130)		
DUP_202104150646	Perfluoropentanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluoropentanoic acid		60	60.9	ng/L	102	(70-130)		
LCS4	Perfluoropentanoic acid		60	64.8	ng/L	108	(70-130)	30	6.4
MBLK	Perfluoropentanoic acid			<0.667	ng/L				
MRL_CHK	Perfluoropentanoic acid		2	2.66	ng/L	133	(50-150)		
MS2_202104160074	Perfluoropentanoic acid	3.2	60	66.8	ng/L	106	(70-130)		
DUP_202104150646	Perfluoroundecanoic acid	ND		ND	ng/L		(0-30)		
LCS3	Perfluoroundecanoic acid		60	67.0	ng/L	112	(70-130)		
LCS4	Perfluoroundecanoic acid		60	64.9	ng/L	108	(70-130)	30	3.2
MBLK	Perfluoroundecanoic acid			<0.667	ng/L				
MRL_CHK	Perfluoroundecanoic acid		2	2.31	ng/L	115	(50-150)		
MS2_202104160074	Perfluoroundecanoic acid	ND	60	65.4	ng/L	109	(70-130)		
EPA Method 537.1 by EPA 537.1									
Prep Batch: 1321921 Analytical Batch: 1322551						**Analysis Date: 04/22/2021**			
LCS1	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.024	0.0270	ug/L	115	(70-130)		
LCS2	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.024	0.0262	ug/L	111	(70-130)	30	3.0
MBLK	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid			<0.000667	ug/L				
MRL_CHK	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid		0.0019	0.00216	ug/L	115	(50-150)		
MS_202104120040	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	0.0019	0.00202	ug/L	108	(50-150)		
MSD_202104120040	11-chloroeicosafluoro-3-oxaundecane-sulfonic acid	ND	0.0019	0.00205	ug/L	109	(50-150)	50	1.4
LCS1	13C2-PFDA (S)		100	102	%	103	(70-130)		
LCS2	13C2-PFDA (S)		100	102	%	102	(70-130)		
MBLK	13C2-PFDA (S)			103	%	103	(70-130)		
MRL_CHK	13C2-PFDA (S)		100	103	%	103	(70-130)		
MS_202104120040	13C2-PFDA (S)		100	104	%	104	(70-130)		
MSD_202104120040	13C2-PFDA (S)		100	99.5	%	99	(70-130)		
LCS1	13C2-PFHxA (S)		100	105	%	105	(70-130)		
LCS2	13C2-PFHxA (S)		100	104	%	104	(70-130)		
MBLK	13C2-PFHxA (S)			104	%	104	(70-130)		
MRL_CHK	13C2-PFHxA (S)		100	102	%	102	(70-130)		
MS_202104120040	13C2-PFHxA (S)		100	101	%	101	(70-130)		

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Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MSD_202104120040	13C2-PFHxA (S)		100	103	%	103	(70-130)		
LCS1	13C2-PFOA– IS#1 (I)		100	102	%	102	(50-150)		
LCS2	13C2-PFOA– IS#1 (I)		100	101	%	101	(50-150)		
MBLK	13C2-PFOA– IS#1 (I)			104	%	104	(50-150)		
MRL_CHK	13C2-PFOA– IS#1 (I)		100	103	%	103	(50-150)		
MS_202104120040	13C2-PFOA– IS#1 (I)		100	106	%	106	(50-150)		
MSD_202104120040	13C2-PFOA– IS#1 (I)		100	107	%	107	(50-150)		
LCS1	13C3-HFPO-DA (S)		100	107	%	107	(70-130)		
LCS2	13C3-HFPO-DA (S)		100	104	%	104	(70-130)		
MBLK	13C3-HFPO-DA (S)			99.8	%	100	(70-130)		
MRL_CHK	13C3-HFPO-DA (S)		100	105	%	105	(70-130)		
MS_202104120040	13C3-HFPO-DA (S)		100	103	%	103	(70-130)		
MSD_202104120040	13C3-HFPO-DA (S)		100	102	%	102	(70-130)		
LCS1	13C4-PFOS– IS#2 (I)		100	99.0	%	99	(50-150)		
LCS2	13C4-PFOS– IS#2 (I)		100	100	%	100	(50-150)		
MBLK	13C4-PFOS– IS#2 (I)			104	%	104	(50-150)		
MRL_CHK	13C4-PFOS– IS#2 (I)		100	102	%	102	(50-150)		
MS_202104120040	13C4-PFOS– IS#2 (I)		100	105	%	105	(50-150)		
MSD_202104120040	13C4-PFOS– IS#2 (I)		100	102	%	102	(50-150)		
LCS1	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.024	0.0270	ug/L	114	(70-130)		
LCS2	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.024	0.0270	ug/L	114	(70-130)	30	0.0
MBLK	4,8-dioxa-3H-perfluorononanoic acid (ADONA)			<0.000667	ug/L				
MRL_CHK	4,8-dioxa-3H-perfluorononanoic acid (ADONA)		0.0019	0.00214	ug/L	114	(50-150)		
MS_202104120040	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.0019	0.00212	ug/L	112	(50-150)		
MSD_202104120040	4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.0019	0.00205	ug/L	108	(50-150)	50	3.5
LCS1	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.023	0.0266	ug/L	114	(70-130)		
LCS2	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.023	0.0252	ug/L	108	(70-130)	30	5.4
MBLK	9-chlorohexadecafluoro-3-oxanone-sulfonic acid			<0.000667	ug/L				
MRL_CHK	9-chlorohexadecafluoro-3-oxanone-sulfonic acid		0.0019	0.00204	ug/L	110	(50-150)		
MS_202104120040	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	0.0019	0.00209	ug/L	112	(50-150)		
MSD_202104120040	9-chlorohexadecafluoro-3-oxanone-sulfonic acid	ND	0.0019	0.00205	ug/L	110	(50-150)	50	2.0
LCS1	d3-NMeFOSAA (I)		100	99.4	%	99	(50-150)		
LCS2	d3-NMeFOSAA (I)		100	98.8	%	99	(50-150)		
MBLK	d3-NMeFOSAA (I)			92.4	%	92	(50-150)		
MRL_CHK	d3-NMeFOSAA (I)		100	102	%	102	(50-150)		
MS_202104120040	d3-NMeFOSAA (I)		100	103	%	103	(50-150)		
MSD_202104120040	d3-NMeFOSAA (I)		100	100	%	100	(50-150)		
LCS1	d5-NEtFOSAA (S)		100	105	%	105	(70-130)		

Spike recovery is already corrected for native results.
Spike which e ceed Limit and Method Blank with po itive re ult are highlighted by Underlining
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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Laboratory QC

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS2	d5-NEtFOSAA (S)		100	102	%	102	(70-130)		
MBLK	d5-NEtFOSAA (S)			109	%	109	(70-130)		
MRL_CHK	d5-NEtFOSAA (S)		100	106	%	106	(70-130)		
MS_202104120040	d5-NEtFOSAA (S)		100	105	%	105	(70-130)		
MSD_202104120040	d5-NEtFOSAA (S)		100	106	%	106	(70-130)		
LCS1	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.025	0.0273	ug/L	109	(70-130)		
LCS2	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.025	0.0273	ug/L	109	(70-130)	30	0.0
MBLK	Hexafluoropropylene oxide dimer acid (HFPO-DA)			<0.000667	ug/L				
MRL_CHK	Hexafluoropropylene oxide dimer acid (HFPO-DA)		0.002	0.00213	ug/L	107	(50-150)		
MS_202104120040	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.002	0.00211	ug/L	106	(50-150)		
MSD_202104120040	Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.002	0.00204	ug/L	102	(50-150)	50	3.4
LCS1	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.025	0.0279	ug/L	112	(70-130)		
LCS2	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.025	0.0281	ug/L	112	(70-130)	30	0.71
MBLK	N-ethyl Perfluorooctanesulfonamidoacetic acid			<0.000667	ug/L				
MRL_CHK	N-ethyl Perfluorooctanesulfonamidoacetic acid		0.002	0.00223	ug/L	112	(50-150)		
MS_202104120040	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	0.002	0.00221	ug/L	111	(50-150)		
MSD_202104120040	N-ethyl Perfluorooctanesulfonamidoacetic acid	ND	0.002	0.00219	ug/L	109	(50-150)	50	0.92
LCS1	N-methyl Perfluorooctanesulfonamidoacetic acid		0.025	0.0282	ug/L	113	(70-130)		
LCS2	N-methyl Perfluorooctanesulfonamidoacetic acid		0.025	0.0274	ug/L	110	(70-130)	30	2.5
MBLK	N-methyl Perfluorooctanesulfonamidoacetic acid			<0.000667	ug/L				
MRL_CHK	N-methyl Perfluorooctanesulfonamidoacetic acid		0.002	0.00208	ug/L	104	(50-150)		
MS_202104120040	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	0.002	0.00215	ug/L	108	(50-150)		
MSD_202104120040	N-methyl Perfluorooctanesulfonamidoacetic acid	ND	0.002	0.00218	ug/L	109	(50-150)	50	1.3
LCS1	Perfluorobutanesulfonic acid (PFBS)		0.022	0.0237	ug/L	107	(70-130)		
LCS2	Perfluorobutanesulfonic acid (PFBS)		0.022	0.0232	ug/L	105	(70-130)	30	2.1
MBLK	Perfluorobutanesulfonic acid (PFBS)			<0.000667	ug/L				
MRL_CHK	Perfluorobutanesulfonic acid (PFBS)		0.0018	0.00176	ug/L	100	(50-150)		
MS_202104120040	Perfluorobutanesulfonic acid (PFBS)	ND	0.0018	0.00182	ug/L	103	(50-150)		
MSD_202104120040	Perfluorobutanesulfonic acid (PFBS)	ND	0.0018	0.00180	ug/L	102	(50-150)	50	0.93
LCS1	Perfluorodecanoic acid (PFDA)		0.025	0.0278	ug/L	111	(70-130)		
LCS2	Perfluorodecanoic acid (PFDA)		0.025	0.0279	ug/L	111	(70-130)	30	0.36
MBLK	Perfluorodecanoic acid (PFDA)			<0.000667	ug/L				
MRL_CHK	Perfluorodecanoic acid (PFDA)		0.002	0.00226	ug/L	113	(50-150)		
MS_202104120040	Perfluorodecanoic acid (PFDA)	ND	0.002	0.00219	ug/L	109	(50-150)		
MSD_202104120040	Perfluorodecanoic acid (PFDA)	ND	0.002	0.00223	ug/L	111	(50-150)	50	1.9
LCS1	Perfluorododecanoic acid (PFDoA)		0.025	0.0289	ug/L	116	(70-130)		
LCS2	Perfluorododecanoic acid (PFDoA)		0.025	0.0296	ug/L	118	(70-130)	30	2.4
MBLK	Perfluorododecanoic acid (PFDoA)			<0.000667	ug/L				

Spike recovery is already corrected for native results.
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Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MRL_CHK	Perfluorododecanoic acid (PFDoA)		0.002	0.00218	ug/L	109	(50-150)		
MS_202104120040	Perfluorododecanoic acid (PFDoA)	ND	0.002	0.00220	ug/L	110	(50-150)		
MSD_202104120040	Perfluorododecanoic acid (PFDoA)	ND	0.002	0.00220	ug/L	110	(50-150)	50	0.20
LCS1	Perfluoroheptanoic acid (PFHpA)		0.025	0.0291	ug/L	116	(70-130)		
LCS2	Perfluoroheptanoic acid (PFHpA)		0.025	0.0293	ug/L	117	(70-130)	30	0.69
MBLK	Perfluoroheptanoic acid (PFHpA)			<0.000667	ug/L				
MRL_CHK	Perfluoroheptanoic acid (PFHpA)		0.002	0.00236	ug/L	118	(50-150)		
MS_202104120040	Perfluoroheptanoic acid (PFHpA)	ND	0.002	0.00236	ug/L	114	(50-150)		
MSD_202104120040	Perfluoroheptanoic acid (PFHpA)	ND	0.002	0.00229	ug/L	111	(50-150)	50	3.2
LCS1	Perfluorohexanesulfonic acid (PFHxS)		0.023	0.0266	ug/L	117	(70-130)		
LCS2	Perfluorohexanesulfonic acid (PFHxS)		0.023	0.0256	ug/L	112	(70-130)	30	3.8
MBLK	Perfluorohexanesulfonic acid (PFHxS)			<0.000667	ug/L				
MRL_CHK	Perfluorohexanesulfonic acid (PFHxS)		0.0018	0.00200	ug/L	110	(50-150)		
MS_202104120040	Perfluorohexanesulfonic acid (PFHxS)	ND	0.0018	0.00202	ug/L	111	(50-150)		
MSD_202104120040	Perfluorohexanesulfonic acid (PFHxS)	ND	0.0018	0.00201	ug/L	110	(50-150)	50	0.34
LCS1	Perfluorohexanoic acid (PFHxA)		0.025	0.0277	ug/L	111	(70-130)		
LCS2	Perfluorohexanoic acid (PFHxA)		0.025	0.0277	ug/L	111	(70-130)	30	0.0
MBLK	Perfluorohexanoic acid (PFHxA)			<0.000667	ug/L				
MRL_CHK	Perfluorohexanoic acid (PFHxA)		0.002	0.00221	ug/L	111	(50-150)		
MS_202104120040	Perfluorohexanoic acid (PFHxA)	ND	0.002	0.00213	ug/L	106	(50-150)		
MSD_202104120040	Perfluorohexanoic acid (PFHxA)	ND	0.002	0.00213	ug/L	107	(50-150)	50	0.00094
LCS1	Perfluorononanoic acid (PFNA)		0.025	0.0284	ug/L	114	(70-130)		
LCS2	Perfluorononanoic acid (PFNA)		0.025	0.0286	ug/L	114	(70-130)	30	0.70
MBLK	Perfluorononanoic acid (PFNA)			<0.000667	ug/L				
MRL_CHK	Perfluorononanoic acid (PFNA)		0.002	0.00250	ug/L	125	(50-150)		
MS_202104120040	Perfluorononanoic acid (PFNA)	ND	0.002	0.00226	ug/L	113	(50-150)		
MSD_202104120040	Perfluorononanoic acid (PFNA)	ND	0.002	0.00224	ug/L	112	(50-150)	50	0.96
LCS1	Perfluorooctanesulfonic acid (PFOS)		0.023	0.0263	ug/L	114	(70-130)		
LCS2	Perfluorooctanesulfonic acid (PFOS)		0.023	0.0256	ug/L	111	(70-130)	30	2.7
MBLK	Perfluorooctanesulfonic acid (PFOS)			<0.000667	ug/L				
MRL_CHK	Perfluorooctanesulfonic acid (PFOS)		0.0019	0.00205	ug/L	111	(50-150)		
MS_202104120040	Perfluorooctanesulfonic acid (PFOS)	ND	0.0019	0.00206	ug/L	111	(50-150)		
MSD_202104120040	Perfluorooctanesulfonic acid (PFOS)	ND	0.0019	0.00208	ug/L	113	(50-150)	50	0.97
LCS1	Perfluorooctanoic acid (PFOA)		0.025	0.0285	ug/L	114	(70-130)		
LCS2	Perfluorooctanoic acid (PFOA)		0.025	0.0282	ug/L	113	(70-130)	30	1.1
MBLK	Perfluorooctanoic acid (PFOA)			<0.000667	ug/L				
MRL_CHK	Perfluorooctanoic acid (PFOA)		0.002	0.00247	ug/L	123	(50-150)		

Spike recovery is already corrected for native results.
Spike which exceed Limit and Method Blank with positive result are highlighted by Underlining
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MS_202104120040	Perfluorooctanoic acid (PFOA)	ND	0.002	0.00237	ug/L	114	(50-150)		
MSD_202104120040	Perfluorooctanoic acid (PFOA)	ND	0.002	0.00228	ug/L	109	(50-150)	50	3.8
LCS1	Perfluorotetradecanoic acid (PFTA)		0.025	0.0300	ug/L	120	(70-130)		
LCS2	Perfluorotetradecanoic acid (PFTA)		0.025	0.0300	ug/L	120	(70-130)	30	0.0
MBLK	Perfluorotetradecanoic acid (PFTA)			<0.000667	ug/L				
MRL_CHK	Perfluorotetradecanoic acid (PFTA)		0.002	0.00264	ug/L	132	(50-150)		
MS_202104120040	Perfluorotetradecanoic acid (PFTA)	ND	0.002	0.00332	ug/L	**157**	(50-150)		
MSD_202104120040	Perfluorotetradecanoic acid (PFTA)	ND	0.002	0.00265	ug/L	123	(50-150)	50	23
LCS1	Perfluorotridecanoic acid (PFTrDA)		0.025	0.0282	ug/L	113	(70-130)		
LCS2	Perfluorotridecanoic acid (PFTrDA)		0.025	0.0288	ug/L	115	(70-130)	30	2.1
MBLK	Perfluorotridecanoic acid (PFTrDA)			<0.000667	ug/L				
MRL_CHK	Perfluorotridecanoic acid (PFTrDA)		0.002	0.00232	ug/L	116	(50-150)		
MS_202104120040	Perfluorotridecanoic acid (PFTrDA)	ND	0.002	0.00227	ug/L	114	(50-150)		
MSD_202104120040	Perfluorotridecanoic acid (PFTrDA)	ND	0.002	0.00218	ug/L	109	(50-150)	50	4.1
LCS1	Perfluoroundecanoic acid (PFUnA)		0.025	0.0294	ug/L	117	(70-130)		
LCS2	Perfluoroundecanoic acid (PFUnA)		0.025	0.0288	ug/L	115	(70-130)	30	2.1
MBLK	Perfluoroundecanoic acid (PFUnA)			<0.000667	ug/L				
MRL_CHK	Perfluoroundecanoic acid (PFUnA)		0.002	0.00221	ug/L	110	(50-150)		
MS_202104120040	Perfluoroundecanoic acid (PFUnA)	ND	0.002	0.00226	ug/L	113	(50-150)		
MSD_202104120040	Perfluoroundecanoic acid (PFUnA)	ND	0.002	0.00214	ug/L	107	(50-150)	50	5.5
Disinfection ByProducts by 300.0 by EPA 300.0									
Analytical Batch: 1322990						**Analysis Date: 04/23/2021**			
LCS1	Chlorate by IC		200	207	ug/L	103	(90-110)		
LCS2	Chlorate by IC		200	207	ug/L	104	(90-110)	10	0.0
MBLK	Chlorate by IC			<2.3	ug/L				
MRL_CHK	Chlorate by IC		10	9.65	ug/L	97	(75-125)		
MS_202104140887	Chlorate by IC	ND	100	108	ug/L	101	(80-120)		
MS_202104190063	Chlorate by IC	ND	100	105	ug/L	104	(80-120)		
MSD_202104140887	Chlorate by IC	ND	100	109	ug/L	102	(80-120)	15	1.4
MSD_202104190063	Chlorate by IC	ND	100	105	ug/L	103	(80-120)	15	0.15
UCMR3 Metals by UCMR 200.8									
Prep Batch: 1321137 Analytical Batch: 1323107						**Analysis Date: 04/23/2021**			
LCS1	Chromium		10	10.3	ug/L	103	(85-115)		
LCS2	Chromium		10	10.3	ug/L	103	(85-115)	20	0.0
MBLK	Chromium			<0.2	ug/L				
MRL_CHK	Chromium		0.2	0.219	ug/L	109	(50-150)		
MS_202104090324	Chromium	ND	10	10.2	ug/L	101	(70-130)		

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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
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200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MS2_202104050111	Chromium	ND	0.2	0.183	ug/L	86	(70-130)		
MSD_202104090324	Chromium	ND	10	10.4	ug/L	103	(70-130)	20	1.6
MSD2_202104050111	Chromium	ND	0.2	0.204	ug/L	97	(70-130)	20	11
LCS1	Cobalt		10	10.3	ug/L	103	(85-115)		
LCS2	Cobalt		10	10.2	ug/L	103	(85-115)	20	0.0
MBLK	Cobalt			<1	ug/L				
MRL_CHK	Cobalt		1	1.05	ug/L	105	(50-150)		
MS_202104090324	Cobalt	ND	10	10.0	ug/L	100	(70-130)		
MS2_202104050111	Cobalt	ND	1	0.986	ug/L	99	(70-130)		
MSD_202104090324	Cobalt	ND	10	10.2	ug/L	102	(70-130)	20	1.8
MSD2_202104050111	Cobalt	ND	1	1.00	ug/L	100	(70-130)	20	1.4
LCS1	Indium (115) (S)		100	102	%	102	(60-125)		
LCS2	Indium (115) (S)		100	102	%	102	(60-125)		
MBLK	Indium (115) (S)			101	%	101	(60-125)		
MRL_CHK	Indium (115) (S)		100	99.1	%		(60-125)		
MS_202104090324	Indium (115) (S)		100	102	%	102	(60-125)		
MS2_202104050111	Indium (115) (S)		100	105	%	105	(60-125)		
MSD_202104090324	Indium (115) (S)		100	103	%	103	(60-125)		
MSD2_202104050111	Indium (115) (S)		100	104	%	104	(60-125)		
LCS1	Molybdenum		10	10.4	ug/L	104	(85-115)		
LCS2	Molybdenum		10	10.4	ug/L	104	(85-115)	20	0.0
MBLK	Molybdenum			<1	ug/L				
MRL_CHK	Molybdenum		1	1.07	ug/L	107	(50-150)		
MS_202104090324	Molybdenum	ND	10	10.4	ug/L	104	(70-130)		
MS2_202104050111	Molybdenum	ND	1	0.987	ug/L	98	(70-130)		
MSD_202104090324	Molybdenum	ND	10	10.4	ug/L	104	(70-130)	20	0.27
MSD2_202104050111	Molybdenum	ND	1	1.02	ug/L	101	(70-130)	20	3.2
LCS1	Scandium (45) (S)		100	101	%	101	(60-125)		
LCS2	Scandium (45) (S)		100	101	%	101	(60-125)		
MBLK	Scandium (45) (S)			101	%	101	(60-125)		
MRL_CHK	Scandium (45) (S)		100	98.8	%		(60-125)		
MS_202104090324	Scandium (45) (S)		100	104	%	104	(60-125)		
MS2_202104050111	Scandium (45) (S)		100	106	%	106	(60-125)		
MSD_202104090324	Scandium (45) (S)		100	104	%	104	(60-125)		
MSD2_202104050111	Scandium (45) (S)		100	106	%	106	(60-125)		
LCS1	Strontium		10	10.1	ug/L	101	(85-115)		
LCS2	Strontium		10	10.1	ug/L	101	(85-115)	20	0.0
MBLK	Strontium			<0.3	ug/L				

Spike recovery is already corrected for native results.
Spike which exceed Limit and Method Blank with positive result are highlighted by Underlining
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

eurofins | Eaton Analytical

Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MRL_CHK	Strontium		0.3	0.324	ug/L	108	(50-150)		
MS_202104090324	Strontium	ND	10	10.4	ug/L	102	(70-130)		
MS2_202104050111	Strontium	ND	0.3	0.566	ug/L	108	(70-130)		
MSD_202104090324	Strontium	ND	10	10.5	ug/L	103	(70-130)	20	0.43
MSD2_202104050111	Strontium	ND	0.3	0.563	ug/L	107	(70-130)	20	0.48
LCS1	Vanadium		10	10.1	ug/L	101	(85-115)		
LCS2	Vanadium		10	10.2	ug/L	102	(85-115)	20	0.99
MBLK	Vanadium			<0.2	ug/L				
MRL_CHK	Vanadium		0.2	0.209	ug/L	104	(50-150)		
MS_202104090324	Vanadium	ND	10	10.1	ug/L	100	(70-130)		
MS2_202104050111	Vanadium	ND	0.2	0.143	ug/L	**65**	(70-130)		
MSD_202104090324	Vanadium	ND	10	10.2	ug/L	101	(70-130)	20	0.74
MSD2_202104050111	Vanadium	ND	0.2	0.263	ug/L	125	(70-130)	20	**59**

Spike recovery is already corrected for native results.
Spike which exceed Limit and Method Blank with positive result are highlighted by Underlining
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

eurofins | Eaton Analytical

Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Hits

Report: 929317
Project: CCR
Group: SPECIAL Annual Metals HI+UCMR3
200.8 ClO3, Cr6 + Al, Zn

Honolulu Board of Water Supply
Erwin Kawata
630 South Beretania Street
Public Service Bldg." Room 308
Honolulu, HI 96843

Samples Received on:
04/14/2021 1541

Analyzed	Analyte	Sample ID	Result	HI Limit	Units	MRL
	202104140804	**HI0000331-241-TP401**				
04/20/2021 18:20	Barium Total ICAP/MS		14	2000	ug/L	2.0
04/24/2021 08:27	Chlorate by IC		32		ug/L	10
04/23/2021 20:46	Chromium		1.3	100	ug/L	1.0
04/16/2021 20:50	Chromium Total ICAP/MS		1.5	100	ug/L	1.0
04/20/2021 18:20	Copper Total ICAP/MS		3.4	1300	ug/L	2.0
04/25/2021 13:23	Hexavalent Chromium		1.8		ug/L	0.020
04/20/2021 13:52	Sodium Total ICAP		36		mg/L	1.0
04/23/2021 20:24	Strontium		190		ug/L	0.30
04/23/2021 20:46	Vanadium		9.8		ug/L	1.0

SUMMARY OF POSITIVE DATA ONLY

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Erwin Kawata
City & County of Honolulu
630 South Beretania Street
Public Service Bldg. Room 308
Honolulu, Hawaii 96843

Generated 12/15/2022 8:55:56 PM

JOB DESCRIPTION

RED-HILL

JOB NUMBER

380-30484-1

Eurofins Eaton Monrovia
750 Royal Oaks Drive
Suite 100
Monrovia CA 91016

See page two for job notes and contact information.

Job Notes

Laboratory certifies that the test results meet all TNI 2016 and ISO/IEC 17025:2017 requirements unless noted under the individual analysis.

Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report,Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.

Test results relate only to the sample(s) tested.

Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).

This report shall not be reproduced except in full, without the written approval of the laboratory.

This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

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

Rachelle Arada

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12/15/2022 8:55:56 PM

Authorized for release by
Rachelle Arada, Manager of Project Management
Rachelle.Arada@et.eurofinsus.com
(626)386-1106

Table of Contents

Definitions/Glossary

Client: City & County of Honolulu
Job ID: 380-30484-1
Project/Site: RED-HILL

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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

Job ID: 380-30484-1

Laboratory: Eurofins Eaton Monrovia

Narrative

Job Narrative
380-30484-1

Comments
No additional comments.

Receipt
The samples were received on 12/7/2022 9:40 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 2.5º C.

LCMS
No analytical or quality issues were noted, other than those described 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: RED-HILL

Job ID: 380-30484-1

Client Sample ID: HALAWA SHAFT — Lab Sample ID: 380-30484-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	4.2		2.0		ng/L	1		533	Total/NA
Perfluorohexanoic acid (PFHxA)	2.1		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.9		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.2		2.0		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.9		2.0		ng/L	1		537.1	Total/NA

Client Sample ID: FB: HALAWA SHAFT — Lab Sample ID: 380-30484-2

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Eaton Monrovia

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

Job ID: 380-30484-1

Client Sample ID: HALAWA SHAFT
Date Collected: 12/05/22 09:45
Date Received: 12/07/22 09:40

Lab Sample ID: 380-30484-1
Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorodecanoic acid (PFDA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorododecanoic acid (PFDoA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorohexanesulfonic acid (PFHxS)	**4.2**		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorohexanoic acid (PFHxA)	**2.1**		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorononanoic acid (PFNA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorooctanesulfonic acid (PFOS)	**4.9**		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorooctanoic acid (PFOA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluorobutanoic acid (PFBA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluoropentanoic acid (PFPeA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*78*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C6 PFDA	*83*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C5 PFHxA	*87*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C4 PFHpA	*92*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C8 PFOA	*93*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C9 PFNA	*89*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C7 PFUnA	*82*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C2 PFDoA	*81*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C4 PFBA	*88*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C5 PFPeA	*86*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C3 PFBS	*92*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C3 PFHxS	*93*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*

Client Sample ID: HALAWA SHAFT

Lab Sample ID: 380-30484-1

Date Collected: 12/05/22 09:45

Matrix: Water

Date Received: 12/07/22 09:40

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOS	*86*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C2-4:2-FTS	*97*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C2-6:2-FTS	*94*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*
13C2-8:2-FTS	*89*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:07*	*1*

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorooctanesulfonic acid (PFOS)	**3.2**		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorohexanoic acid (PFHxA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorododecanoic acid (PFDoA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorooctanoic acid (PFOA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorodecanoic acid (PFDA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorohexanesulfonic acid (PFHxS)	**3.9**		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorononanoic acid (PFNA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorotetradecanoic acid (PFTA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		12/13/22 06:45	12/14/22 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*96*		*70 - 130*	*12/13/22 06:45*	*12/14/22 19:56*	*1*
13C2 PFHxA	*112*		*70 - 130*	*12/13/22 06:45*	*12/14/22 19:56*	*1*
13C2 PFDA	*111*		*70 - 130*	*12/13/22 06:45*	*12/14/22 19:56*	*1*
13C3-GenX	*111*		*70 - 130*	*12/13/22 06:45*	*12/14/22 19:56*	*1*

Client Sample ID: FB: HALAWA SHAFT

Lab Sample ID: 380-30484-2

Date Collected: 12/05/22 09:45

Matrix: Water

Date Received: 12/07/22 09:40

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0	ng/L		12/12/22 13:44	12/13/22 19:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0	ng/L		12/12/22 13:44	12/13/22 19:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0	ng/L		12/12/22 13:44	12/13/22 19:16	1

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

Job ID: 380-30484-1

Client Sample ID: FB: HALAWA SHAFT
Date Collected: 12/05/22 09:45
Date Received: 12/07/22 09:40

Lab Sample ID: 380-30484-2
Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorodecanoic acid (PFDA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorododecanoic acid (PFDoA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorohexanoic acid (PFHxA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorononanoic acid (PFNA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorooctanoic acid (PFOA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluorobutanoic acid (PFBA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluoropentanoic acid (PFPeA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 19:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*82*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C6 PFDA	*89*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C5 PFHxA	*91*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C4 PFHpA	*89*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C8 PFOA	*95*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C9 PFNA	*90*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C7 PFUnA	*87*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C2 PFDoA	*86*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C4 PFBA	*95*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C5 PFPeA	*99*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C3 PFBS	*94*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C3 PFHxS	*88*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C8 PFOS	*87*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C2-4:2-FTS	*89*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C2-6:2-FTS	*93*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*
13C2-8:2-FTS	*83*		*50 - 200*	*12/12/22 13:44*	*12/13/22 19:16*	*1*

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

Job ID: 380-30484-1

Client Sample ID: FB: HALAWA SHAFT
Date Collected: 12/05/22 09:45
Date Received: 12/07/22 09:40

Lab Sample ID: 380-30484-2
Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorohexanoic acid (PFHxA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorododecanoic acid (PFDoA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorooctanoic acid (PFOA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorodecanoic acid (PFDA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorononanoic acid (PFNA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorotetradecanoic acid (PFTA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 20:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*92*		*70 - 130*	*12/13/22 06:45*	*12/14/22 20:06*	*1*
13C2 PFHxA	*119*		*70 - 130*	*12/13/22 06:45*	*12/14/22 20:06*	*1*
13C2 PFDA	*114*		*70 - 130*	*12/13/22 06:45*	*12/14/22 20:06*	*1*
13C3-GenX	*113*		*70 - 130*	*12/13/22 06:45*	*12/14/22 20:06*	*1*

Surrogate Summary

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

Job ID: 380-30484-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS	PFHxA	PFDA	GenX
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
380-30219-E-1-A LMS	Matrix Spike	84	109	97	105
380-30219-E-2-A DU	Duplicate	84	113	98	100
380-30484-1	HALAWA SHAFT	96	112	111	111
380-30484-2	FB: HALAWA SHAFT	92	119	114	113
LCS 380-26596/23-A	Lab Control Sample	93	118	109	105
LCSD 380-26596/24-A	Lab Control Sample Dup	95	115	112	114
MBL 380-26596/21-A	Method Blank	94	100	99	99
MRL 380-26596/22-A	Lab Control Sample	96	114	108	105

Surrogate Legend

d5NEFOS = d5-NEtFOSAA

PFHxA = 13C2 PFHxA

PFDA = 13C2 PFDA

GenX = 13C3-GenX

Isotope Dilution Summary

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

Job ID: 380-30484-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HFPODA	C6PFDA	13C5PHA	C4PFHA	C8PFOA	C9PFNA	13C7PUA	PFDoA
Lab Sample ID	Client Sample ID								
380-30166-Y-1-A MS	Matrix Spike								

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	C3PFBS	C3PFHS	C8PFOS	42FTS	62FTS	82FTS
Lab Sample ID	Client Sample ID								
380-30166-Y-1-A MS	Matrix Spike								

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

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HFPODA	C6PFDA	13C5PHA	C4PFHA	C8PFOA	C9PFNA	13C7PUA	PFDoA
Lab Sample ID	Client Sample ID	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)
380-30402-B-1-A DU	Duplicate	80	78	85	87	88	83	74	73
380-30484-1	HALAWA SHAFT	78	83	87	92	93	89	82	81
380-30484-2	FB: HALAWA SHAFT	82	89	91	89	95	90	87	86
LCS 380-26520/23-A	Lab Control Sample	83	90	82	86	87	87	88	85
LCSD 380-26520/24-A	Lab Control Sample Dup	90	88	89	93	93	91	87	80
MBL 380-26520/21-A	Method Blank	74	68	78	76	77	75	69	71
MRL 380-26520/22-A	Lab Control Sample	84	86	90	86	90	88	80	81

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	C3PFBS	C3PFHS	C8PFOS	42FTS	62FTS	82FTS
Lab Sample ID	Client Sample ID	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)
380-30402-B-1-A DU	Duplicate	93	103	87	91	87	109	103	83
380-30484-1	HALAWA SHAFT	88	86	92	93	86	97	94	89
380-30484-2	FB: HALAWA SHAFT	95	99	94	88	87	89	93	83
LCS 380-26520/23-A	Lab Control Sample	84	83	92	92	91	92	98	88
LCSD 380-26520/24-A	Lab Control Sample Dup	94	89	84	83	85	84	90	79
MBL 380-26520/21-A	Method Blank	76	78	74	72	72	79	82	74
MRL 380-26520/22-A	Lab Control Sample	88	90	80	85	83	87	93	85

Surrogate Legend

HFPODA = 13C3 HFPO-DA

Isotope Dilution Summary

Client: City & County of Honolulu
Job ID: 380-30484-1
Project/Site: RED-HILL

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

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

Job ID: 380-30484-1

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

Lab Sample ID: MBL 380-26520/21-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 26520

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorodecanoic acid (PFDA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorododecanoic acid (PFDoA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorohexanoic acid (PFHxA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorononanoic acid (PFNA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorooctanoic acid (PFOA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluorobutanoic acid (PFBA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluoropentanoic acid (PFPeA)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1
Perfluoropentanesulfonic acid (PFPeS)	ND		2.0		ng/L		12/12/22 13:44	12/13/22 15:03	1

Isotope Dilution	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*74*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C6 PFDA	*68*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C5 PFHxA	*78*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C4 PFHpA	*76*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C8 PFOA	*77*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C9 PFNA	*75*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C7 PFUnA	*69*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C2 PFDoA	*71*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C4 PFBA	*76*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C5 PFPeA	*78*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C3 PFBS	*74*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*
13C3 PFHxS	*72*		*50 - 200*	*12/12/22 13:44*	*12/13/22 15:03*	*1*

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

Lab Sample ID: MBL 380-26520/21-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 26520

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	72		50 - 200	12/12/22 13:44	12/13/22 15:03	1
13C2-4:2-FTS	79		50 - 200	12/12/22 13:44	12/13/22 15:03	1
13C2-6:2-FTS	82		50 - 200	12/12/22 13:44	12/13/22 15:03	1
13C2-8:2-FTS	74		50 - 200	12/12/22 13:44	12/13/22 15:03	1

Lab Sample ID: LCS 380-26520/23-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 26520

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	120	133		ng/L		111	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	120	130		ng/L		109	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	120	141		ng/L		118	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	120	135		ng/L		113	70 - 130
Perfluorobutanesulfonic acid (PFBS)	120	134		ng/L		112	70 - 130
Perfluorodecanoic acid (PFDA)	120	140		ng/L		117	70 - 130
Perfluorododecanoic acid (PFDoA)	120	142		ng/L		118	70 - 130
Perfluoroheptanoic acid (PFHpA)	120	132		ng/L		111	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	120	132		ng/L		110	70 - 130
Perfluorohexanoic acid (PFHxA)	120	143		ng/L		120	70 - 130
Perfluorononanoic acid (PFNA)	120	132		ng/L		111	70 - 130
Perfluorooctanesulfonic acid (PFOS)	120	135		ng/L		112	70 - 130
Perfluorooctanoic acid (PFOA)	120	132		ng/L		110	70 - 130
Perfluoroundecanoic acid (PFUnA)	120	134		ng/L		112	70 - 130
Perfluorobutanoic acid (PFBA)	120	126		ng/L		105	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	120	133		ng/L		111	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	120	138		ng/L		115	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	120	135		ng/L		113	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	120	131		ng/L		109	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	120	133		ng/L		111	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	120	128		ng/L		107	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	120	132		ng/L		110	70 - 130
Perfluoropentanoic acid (PFPeA)	120	139		ng/L		116	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	120	142		ng/L		119	70 - 130

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

Lab Sample ID: LCS 380-26520/23-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 26520

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluoropentanesulfonic acid (PFPeS)			120	126		ng/L		106	70 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*83*		*50 - 200*
13C6 PFDA	*90*		*50 - 200*
13C5 PFHxA	*82*		*50 - 200*
13C4 PFHpA	*86*		*50 - 200*
13C8 PFOA	*87*		*50 - 200*
13C9 PFNA	*87*		*50 - 200*
13C7 PFUnA	*88*		*50 - 200*
13C2 PFDoA	*85*		*50 - 200*
13C4 PFBA	*84*		*50 - 200*
13C5 PFPeA	*83*		*50 - 200*
13C3 PFBS	*92*		*50 - 200*
13C3 PFHxS	*92*		*50 - 200*
13C8 PFOS	*91*		*50 - 200*
13C2-4:2-FTS	*92*		*50 - 200*
13C2-6:2-FTS	*98*		*50 - 200*
13C2-8:2-FTS	*88*		*50 - 200*

Lab Sample ID: LCSD 380-26520/24-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 26520

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			120	131		ng/L		109	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	130		ng/L		108	70 - 130	0	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			120	138		ng/L		115	70 - 130	2	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			120	136		ng/L		113	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)			120	136		ng/L		113	70 - 130	2	30
Perfluorodecanoic acid (PFDA)			120	142		ng/L		119	70 - 130	2	30
Perfluorododecanoic acid (PFDoA)			120	141		ng/L		118	70 - 130	0	30
Perfluoroheptanoic acid (PFHpA)			120	127		ng/L		106	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)			120	129		ng/L		107	70 - 130	2	30
Perfluorohexanoic acid (PFHxA)			120	140		ng/L		117	70 - 130	2	30
Perfluorononanoic acid (PFNA)			120	128		ng/L		107	70 - 130	3	30
Perfluorooctanesulfonic acid (PFOS)			120	133		ng/L		111	70 - 130	1	30
Perfluorooctanoic acid (PFOA)			120	126		ng/L		105	70 - 130	4	30
Perfluoroundecanoic acid (PFUnA)			120	133		ng/L		111	70 - 130	1	30
Perfluorobutanoic acid (PFBA)			120	126		ng/L		105	70 - 130	0	30

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

Lab Sample ID: LCSD 380-26520/24-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 26520

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)			120	137		ng/L		114	70 - 130	3	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)			120	141		ng/L		118	70 - 130	2	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)			120	133		ng/L		111	70 - 130	2	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)			120	138		ng/L		115	70 - 130	5	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)			120	131		ng/L		109	70 - 130	1	30
Perfluoro-3-methoxypropanoic acid (PFMPA)			120	129		ng/L		108	70 - 130	1	30
Perfluoro-4-methoxybutanoic acid (PFMBA)			120	137		ng/L		114	70 - 130	4	30
Perfluoropentanoic acid (PFPeA)			120	138		ng/L		115	70 - 130	0	30
Perfluoroheptanesulfonic acid (PFHpS)			120	140		ng/L		117	70 - 130	2	30
Perfluoropentanesulfonic acid (PFPeS)			120	130		ng/L		108	70 - 130	3	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3 HFPO-DA	*90*		*50 - 200*
13C6 PFDA	*88*		*50 - 200*
13C5 PFHxA	*89*		*50 - 200*
13C4 PFHpA	*93*		*50 - 200*
13C8 PFOA	*93*		*50 - 200*
13C9 PFNA	*91*		*50 - 200*
13C7 PFUnA	*87*		*50 - 200*
13C2 PFDoA	*80*		*50 - 200*
13C4 PFBA	*94*		*50 - 200*
13C5 PFPeA	*89*		*50 - 200*
13C3 PFBS	*84*		*50 - 200*
13C3 PFHxS	*83*		*50 - 200*
13C8 PFOS	*85*		*50 - 200*
13C2-4:2-FTS	*84*		*50 - 200*
13C2-6:2-FTS	*90*		*50 - 200*
13C2-8:2-FTS	*79*		*50 - 200*

Lab Sample ID: MRL 380-26520/22-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 26520

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			2.00	2.29		ng/L		115	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			2.00	2.35		ng/L		118	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			2.00	2.69		ng/L		135	50 - 150

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

Lab Sample ID: MRL 380-26520/22-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 26520

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.40		ng/L		120	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	2.69		ng/L		135	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.54		ng/L		127	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.55		ng/L		128	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.46		ng/L		123	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.31		ng/L		116	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.62		ng/L		131	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.33		ng/L		117	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.54		ng/L		127	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.57		ng/L		129	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.58		ng/L		129	50 - 150
Perfluorobutanoic acid (PFBA)	2.00	2.93		ng/L		147	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.55		ng/L		128	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.54		ng/L		127	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.70		ng/L		135	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	2.39		ng/L		120	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	2.00	2.37		ng/L		119	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.55		ng/L		128	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	2.38		ng/L		119	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.49		ng/L		125	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	2.49		ng/L		125	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	2.47		ng/L		123	50 - 150

Isotope Dilution	*MRL %Recovery*	*MRL Qualifier*	*Limits*
13C3 HFPO-DA	*84*		*50 - 200*
13C6 PFDA	*86*		*50 - 200*
13C5 PFHxA	*90*		*50 - 200*
13C4 PFHpA	*86*		*50 - 200*
13C8 PFOA	*90*		*50 - 200*
13C9 PFNA	*88*		*50 - 200*
13C7 PFUnA	*80*		*50 - 200*
13C2 PFDoA	*81*		*50 - 200*
13C4 PFBA	*88*		*50 - 200*
13C5 PFPeA	*90*		*50 - 200*
13C3 PFBS	*80*		*50 - 200*
13C3 PFHxS	*85*		*50 - 200*
13C8 PFOS	*83*		*50 - 200*

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

Lab Sample ID: MRL 380-26520/22-A
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 26520

Isotope Dilution	*MRL %Recovery*	*MRL Qualifier*	*Limits*
13C2-4:2-FTS	*87*		*50 - 200*
13C2-6:2-FTS	*93*		*50 - 200*
13C2-8:2-FTS	*85*		*50 - 200*

Lab Sample ID: 380-30166-Y-1-A MS
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 26520

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			120	124		ng/L					
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			120	129		ng/L					
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			120	125		ng/L					
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			120	130		ng/L					
Perfluorobutanesulfonic acid (PFBS)			120	133		ng/L					
Perfluorodecanoic acid (PFDA)			120	138		ng/L					
Perfluorododecanoic acid (PFDoA)			120	141		ng/L					
Perfluoroheptanoic acid (PFHpA)			120	133		ng/L					
Perfluorohexanesulfonic acid (PFHxS)			120	135		ng/L					
Perfluorohexanoic acid (PFHxA)			120	135		ng/L					
Perfluorononanoic acid (PFNA)			120	129		ng/L					
Perfluorooctanesulfonic acid (PFOS)			120	129		ng/L					
Perfluorooctanoic acid (PFOA)			120	130		ng/L					
Perfluoroundecanoic acid (PFUnA)			120	142		ng/L					
Perfluorobutanoic acid (PFBA)			120	133		ng/L					
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)			120	141		ng/L					
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)			120	141		ng/L					
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)			120	133		ng/L					
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)			120	116		ng/L					
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)			120	133		ng/L					
Perfluoro-3-methoxypropanoic acid (PFMPA)			120	138		ng/L					
Perfluoro-4-methoxybutanoic acid (PFMBA)			120	137		ng/L					
Perfluoropentanoic acid (PFPeA)			120	145		ng/L					
Perfluoroheptanesulfonic acid (PFHpS)			120	133		ng/L					
Perfluoropentanesulfonic acid (PFPeS)			120	137		ng/L					

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

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C3 HFPO-DA			
13C6 PFDA			
13C5 PFHxA			
13C4 PFHpA			
13C8 PFOA			
13C9 PFNA			
13C7 PFUnA			
13C2 PFDoA			
13C4 PFBA			
13C5 PFPeA			
13C3 PFBS			
13C3 PFHxS			
13C8 PFOS			
13C2-4:2-FTS			
13C2-6:2-FTS			
13C2-8:2-FTS			

Lab Sample ID: 380-30402-B-1-A DU
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 26520

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND			ND		ng/L				NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND			ND		ng/L				NC	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND			ND		ng/L				NC	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND			ND		ng/L				NC	30
Perfluorobutanesulfonic acid (PFBS)	ND			ND		ng/L				NC	30
Perfluorodecanoic acid (PFDA)	ND			ND		ng/L				NC	30
Perfluorododecanoic acid (PFDoA)	ND			ND		ng/L				NC	30
Perfluoroheptanoic acid (PFHpA)	ND			ND		ng/L				NC	30
Perfluorohexanesulfonic acid (PFHxS)	ND			ND		ng/L				NC	30
Perfluorohexanoic acid (PFHxA)	ND			ND		ng/L				NC	30
Perfluorononanoic acid (PFNA)	ND			ND		ng/L				NC	30
Perfluorooctanesulfonic acid (PFOS)	ND			ND		ng/L				NC	30
Perfluorooctanoic acid (PFOA)	ND			ND		ng/L				NC	30
Perfluoroundecanoic acid (PFUnA)	ND			ND		ng/L				NC	30
Perfluorobutanoic acid (PFBA)	ND			ND		ng/L				NC	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND			ND		ng/L				NC	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND			ND		ng/L				NC	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND			ND		ng/L				NC	30

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

Lab Sample ID: 380-30402-B-1-A DU
Matrix: Water
Analysis Batch: 26528

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 26520

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND			ND		ng/L				NC	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	ND			ND		ng/L				NC	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND			ND		ng/L				NC	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND			ND		ng/L				NC	30
Perfluoropentanoic acid (PFPeA)	ND			ND		ng/L				NC	30
Perfluoroheptanesulfonic acid (PFHpS)	ND			ND		ng/L				NC	30
Perfluoropentanesulfonic acid (PFPeS)	ND			ND		ng/L				NC	30

Isotope Dilution	*DU %Recovery*	*DU Qualifier*	*Limits*
13C3 HFPO-DA	*80*		*50 - 200*
13C6 PFDA	*78*		*50 - 200*
13C5 PFHxA	*85*		*50 - 200*
13C4 PFHpA	*87*		*50 - 200*
13C8 PFOA	*88*		*50 - 200*
13C9 PFNA	*83*		*50 - 200*
13C7 PFUnA	*74*		*50 - 200*
13C2 PFDoA	*73*		*50 - 200*
13C4 PFBA	*93*		*50 - 200*
13C5 PFPeA	*103*		*50 - 200*
13C3 PFBS	*87*		*50 - 200*
13C3 PFHxS	*91*		*50 - 200*
13C8 PFOS	*87*		*50 - 200*
13C2-4:2-FTS	*109*		*50 - 200*
13C2-6:2-FTS	*103*		*50 - 200*
13C2-8:2-FTS	*83*		*50 - 200*

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

Lab Sample ID: MBL 380-26596/21-A
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 26596

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluoroundecanoic acid (PFUnA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorohexanoic acid (PFHxA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorododecanoic acid (PFDoA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorooctanoic acid (PFOA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorodecanoic acid (PFDA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1

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

Lab Sample ID: MBL 380-26596/21-A
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 26596

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorononanoic acid (PFNA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorotetradecanoic acid (PFTA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
Perfluorotridecanoic acid (PFTrDA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		2.0		ng/L		12/13/22 06:45	12/14/22 16:59	1

Surrogate	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*94*		*70 - 130*	*12/13/22 06:45*	*12/14/22 16:59*	*1*
13C2 PFHxA	*100*		*70 - 130*	*12/13/22 06:45*	*12/14/22 16:59*	*1*
13C2 PFDA	*99*		*70 - 130*	*12/13/22 06:45*	*12/14/22 16:59*	*1*
13C3-GenX	*99*		*70 - 130*	*12/13/22 06:45*	*12/14/22 16:59*	*1*

Lab Sample ID: LCS 380-26596/23-A
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 26596

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.0	28.4		ng/L		113	70 - 130
Perfluorooctanesulfonic acid (PFOS)	23.2	25.3		ng/L		109	70 - 130
Perfluoroundecanoic acid (PFUnA)	25.0	26.0		ng/L		104	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.0	26.4		ng/L		106	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.0	25.1		ng/L		100	70 - 130
Perfluorohexanoic acid (PFHxA)	25.0	27.3		ng/L		109	70 - 130
Perfluorododecanoic acid (PFDoA)	25.0	27.8		ng/L		111	70 - 130
Perfluorooctanoic acid (PFOA)	25.0	28.1		ng/L		112	70 - 130
Perfluorodecanoic acid (PFDA)	25.0	27.1		ng/L		108	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	22.8	25.6		ng/L		112	70 - 130
Perfluorobutanesulfonic acid (PFBS)	22.1	23.8		ng/L		108	70 - 130
Perfluoroheptanoic acid (PFHpA)	25.0	29.3		ng/L		117	70 - 130
Perfluorononanoic acid (PFNA)	25.0	27.8		ng/L		111	70 - 130
Perfluorotetradecanoic acid (PFTA)	25.0	25.9		ng/L		104	70 - 130
Perfluorotridecanoic acid (PFTrDA)	25.0	27.0		ng/L		108	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	23.4	24.3		ng/L		104	70 - 130

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

Lab Sample ID: LCS 380-26596/23-A
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 26596

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			23.6	25.8		ng/L		109	70 - 130		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			23.6	25.6		ng/L		108	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d5-NEtFOSAA	*93*		*70 - 130*
13C2 PFHxA	*118*		*70 - 130*
13C2 PFDA	*109*		*70 - 130*
13C3-GenX	*105*		*70 - 130*

Lab Sample ID: LCSD 380-26596/24-A
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 26596

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			25.0	29.5		ng/L		118	70 - 130	4	30
Perfluorooctanesulfonic acid (PFOS)			23.2	25.2		ng/L		109	70 - 130	0	30
Perfluoroundecanoic acid (PFUnA)			25.0	26.7		ng/L		107	70 - 130	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			25.0	25.4		ng/L		102	70 - 130	4	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			25.0	24.8		ng/L		99	70 - 130	1	30
Perfluorohexanoic acid (PFHxA)			25.0	29.1		ng/L		116	70 - 130	6	30
Perfluorododecanoic acid (PFDoA)			25.0	28.8		ng/L		115	70 - 130	3	30
Perfluorooctanoic acid (PFOA)			25.0	28.0		ng/L		112	70 - 130	0	30
Perfluorodecanoic acid (PFDA)			25.0	27.6		ng/L		110	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)			22.8	24.7		ng/L		108	70 - 130	3	30
Perfluorobutanesulfonic acid (PFBS)			22.1	25.8		ng/L		117	70 - 130	8	30
Perfluoroheptanoic acid (PFHpA)			25 0	28 8		ng/L		115	70 - 130	2	30
Perfluorononanoic acid (PFNA)			25.0	28.8		ng/L		115	70 - 130	4	30
Perfluorotetradecanoic acid (PFTA)			25.0	26.5		ng/L		106	70 - 130	2	30
Perfluorotridecanoic acid (PFTrDA)			25.0	28.5		ng/L		114	70 - 130	5	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			23.4	25.1		ng/L		107	70 - 130	3	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			23.6	25.5		ng/L		108	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			23.6	27.0		ng/L		114	70 - 130	5	30

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

Lab Sample ID: LCSD 380-26596/24-A
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 26596

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
d5-NEtFOSAA	95		70 - 130
13C2 PFHxA	115		70 - 130
13C2 PFDA	112		70 - 130
13C3-GenX	114		70 - 130

Lab Sample ID: MRL 380-26596/22-A
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 26596

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.12		ng/L		106	50 - 150
Perfluorooctanesulfonic acid (PFOS)	1.86	1.93	J	ng/L		104	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.20		ng/L		110	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.02		ng/L		101	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	1.96	J	ng/L		98	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.18		ng/L		109	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.13		ng/L		106	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.33		ng/L		116	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.27		ng/L		113	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	1.83	1.90	J	ng/L		104	50 - 150
Perfluorobutanesulfonic acid (PFBS)	1.77	1.78	J	ng/L		100	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.23		ng/L		111	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.20		ng/L		110	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	2.13		ng/L		106	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	2.14		ng/L		107	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	1.87	1.92	J	ng/L		102	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	1.89	1.82	J	ng/L		96	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.89	1.99	J	ng/L		105	50 - 150

Surrogate	MRL %Recovery	MRL Qualifier	Limits
d5-NEtFOSAA	96		70 - 130
13C2 PFHxA	114		70 - 130
13C2 PFDA	108		70 - 130
13C3-GenX	105		70 - 130

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

Lab Sample ID: 380-30219-E-1-A LMS
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 26596

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		2.00	2.17		ng/L		109	50 - 150
Perfluorooctanesulfonic acid (PFOS)	ND		1.86	2.65		ng/L		100	50 - 150
Perfluoroundecanoic acid (PFUnA)	ND		2.00	2.28		ng/L		114	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		2.00	2.13		ng/L		106	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		2.00	1.95	J	ng/L		97	50 - 150
Perfluorohexanoic acid (PFHxA)	ND		2.00	3.66		ng/L		112	50 - 150
Perfluorododecanoic acid (PFDoA)	ND		2.00	2.34		ng/L		117	50 - 150
Perfluorooctanoic acid (PFOA)	ND		2.00	2.90		ng/L		106	50 - 150
Perfluorodecanoic acid (PFDA)	ND		2.00	2.40		ng/L		120	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	ND		1.83	3.03		ng/L		114	50 - 150
Perfluorobutanesulfonic acid (PFBS)	ND		1.77	2.80		ng/L		111	50 - 150
Perfluoroheptanoic acid (PFHpA)	ND		2.00	3.45		ng/L		115	50 - 150
Perfluorononanoic acid (PFNA)	ND		2.00	2.71		ng/L		106	50 - 150
Perfluorotetradecanoic acid (PFTA)	ND		2.00	2.19		ng/L		109	50 - 150
Perfluorotridecanoic acid (PFTrDA)	ND		2.00	2.30		ng/L		115	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND		1.87	1.93	J	ng/L		103	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		1.89	1.90	J	ng/L		100	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		1.89	2.14		ng/L		113	50 - 150

Surrogate	*LMS %Recovery*	*LMS Qualifier*	*Limits*
d5-NEtFOSAA	*84*		*70 - 130*
13C2 PFHxA	*109*		*70 - 130*
13C2 PFDA	*97*		*70 - 130*
13C3-GenX	*105*		*70 - 130*

Lab Sample ID: 380-30219-E-2-A DU
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 26596

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		ND		ng/L		NC	30
Perfluorooctanesulfonic acid (PFOS)	ND		ND		ng/L		NC	30
Perfluoroundecanoic acid (PFUnA)	ND		ND		ng/L		NC	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		ND		ng/L		NC	30

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

Lab Sample ID: 380-30219-E-2-A DU
Matrix: Water
Analysis Batch: 26841

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 26596

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND			ND		ng/L				NC	30
Perfluorohexanoic acid (PFHxA)	ND			ND		ng/L				NC	30
Perfluorododecanoic acid (PFDoA)	ND			ND		ng/L				NC	30
Perfluorooctanoic acid (PFOA)	ND			ND		ng/L				NC	30
Perfluorodecanoic acid (PFDA)	ND			ND		ng/L				NC	30
Perfluorohexanesulfonic acid (PFHxS)	ND			ND		ng/L				NC	30
Perfluorobutanesulfonic acid (PFBS)	ND			ND		ng/L				NC	30
Perfluoroheptanoic acid (PFHpA)	ND			ND		ng/L				NC	30
Perfluorononanoic acid (PFNA)	ND			ND		ng/L				NC	30
Perfluorotetradecanoic acid (PFTA)	ND			ND		ng/L				NC	30
Perfluorotridecanoic acid (PFTrDA)	ND			ND		ng/L				NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	ND			ND		ng/L				NC	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND			ND		ng/L				NC	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND			ND		ng/L				NC	30

Surrogate	*DU %Recovery*	*DU Qualifier*	*Limits*
d5-NEtFOSAA	*84*		*70 - 130*
13C2 PFHxA	*113*		*70 - 130*
13C2 PFDA	*98*		*70 - 130*
13C3-GenX	*100*		*70 - 130*

LCMS

Prep Batch: 26520

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-30484-1	HALAWA SHAFT	Total/NA	Water	533	
380-30484-2	FB: HALAWA SHAFT	Total/NA	Water	533	
MBL 380-26520/21-A	Method Blank	Total/NA	Water	533	
LCS 380-26520/23-A	Lab Control Sample	Total/NA	Water	533	
LCSD 380-26520/24-A	Lab Control Sample Dup	Total/NA	Water	533	
MRL 380-26520/22-A	Lab Control Sample	Total/NA	Water	533	
380-30166-Y-1-A MS	Matrix Spike	Total/NA	Water	533	
380-30402-B-1-A DU	Duplicate	Total/NA	Water	533	

Analysis Batch: 26528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-30484-1	HALAWA SHAFT	Total/NA	Water	533	26520
380-30484-2	FB: HALAWA SHAFT	Total/NA	Water	533	26520
MBL 380-26520/21-A	Method Blank	Total/NA	Water	533	26520
LCS 380-26520/23-A	Lab Control Sample	Total/NA	Water	533	26520
LCSD 380-26520/24-A	Lab Control Sample Dup	Total/NA	Water	533	26520
MRL 380-26520/22-A	Lab Control Sample	Total/NA	Water	533	26520
380-30166-Y-1-A MS	Matrix Spike	Total/NA	Water	533	26520
380-30402-B-1-A DU	Duplicate	Total/NA	Water	533	26520

Prep Batch: 26596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-30484-1	HALAWA SHAFT	Total/NA	Water	537.1 DW	
380-30484-2	FB: HALAWA SHAFT	Total/NA	Water	537.1 DW	
MBL 380-26596/21-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-26596/23-A	Lab Control Sample	Total/NA	Water	537.1 DW	
LCSD 380-26596/24-A	Lab Control Sample Dup	Total/NA	Water	537.1 DW	
MRL 380-26596/22-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-30219-E-1-A LMS	Matrix Spike	Total/NA	Water	537.1 DW	
380-30219-E-2-A DU	Duplicate	Total/NA	Water	537.1 DW	

Analysis Batch: 26841

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-30484-1	HALAWA SHAFT	Total/NA	Water	537.1	26596
380-30484-2	FB: HALAWA SHAFT	Total/NA	Water	537.1	26596
MBL 380-26596/21-A	Method Blank	Total/NA	Water	537.1	26596
LCS 380-26596/23-A	Lab Control Sample	Total/NA	Water	537.1	26596
LCSD 380-26596/24-A	Lab Control Sample Dup	Total/NA	Water	537.1	26596
MRL 380-26596/22-A	Lab Control Sample	Total/NA	Water	537.1	26596
380-30219-E-1-A LMS	Matrix Spike	Total/NA	Water	537.1	26596
380-30219-E-2-A DU	Duplicate	Total/NA	Water	537.1	26596

Lab Chronicle

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

Job ID: 380-30484-1

Client Sample ID: HALAWA SHAFT

Lab Sample ID: 380-30484-1

Date Collected: 12/05/22 09:45

Matrix: Water

Date Received: 12/07/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			26520	EE6W	EA MON	12/12/22 13:44
Total/NA	Analysis	533		1	26528	UKYM	EA MON	12/13/22 19:07
Total/NA	Prep	537.1 DW			26596	US1B	EA MON	12/13/22 06:45
Total/NA	Analysis	537.1		1	26841	UKYM	EA MON	12/14/22 19:56

Client Sample ID: FB: HALAWA SHAFT

Lab Sample ID: 380-30484-2

Date Collected: 12/05/22 09:45

Matrix: Water

Date Received: 12/07/22 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			26520	EE6W	EA MON	12/12/22 13:44
Total/NA	Analysis	533		1	26528	UKYM	EA MON	12/13/22 19:16
Total/NA	Prep	537.1 DW			26596	US1B	EA MON	12/13/22 06:45
Total/NA	Analysis	537.1		1	26841	UKYM	EA MON	12/14/22 20:06

Laboratory References:

EA MON = Eurofins Eaton Monrovia, 750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016, TEL (626)386-1100

Accreditation/Certification Summary

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

Job ID: 380-30484-1

Laboratory: Eurofins Eaton Monrovia

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

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-23

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

Analysis Method	Prep Method	Matrix	Analyte
533	533	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
533	533	Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
533	533	Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
533	533	Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
533	533	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
533	533	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
533	533	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
533	533	Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
533	533	Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)
533	533	Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
533	533	Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
533	533	Water	Perfluorobutanoic acid (PFBA)
533	533	Water	Perfluoroheptanesulfonic acid (PFHpS)
533	533	Water	Perfluoropentanesulfonic acid (PFPeS)
533	533	Water	Perfluoropentanoic acid (PFPeA)
537.1	537.1 DW	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537.1	537.1 DW	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537.1	537.1 DW	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)
537.1	537.1 DW	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)

Method Summary

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

Job ID: 380-30484-1

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA MON
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA MON
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA MON
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA MON

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

EA MON = Eurofins Eaton Monrovia, 750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016, TEL (626)386-1100

Sample Summary

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

Job ID: 380-30484-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
380-30484-1	HALAWA SHAFT	Water	12/05/22 09:45	12/07/22 09:40
380-30484-2	FB: HALAWA SHAFT	Water	12/05/22 09:45	12/07/22 09:40

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

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: RYAN GREER	Lab PM: Arada, Rachelle	Carrier Tracking No(s):	COC No: 380-20245-5728.1
Client Contact: Dr. Ron Fenstemacher	Phone: 808 748 5840	E-Mail: Rachelle.Arada@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: City & County of Honolulu	PWSID:			Job #:
Address: 630 South Beretania Street Chemistry Lab	Due Date Requested:			
City: Honolulu	TAT Requested (days):			
State, Zip: HI, 96843	Compliance Project: Δ Yes Δ No			
Phone: 808-748-5091(Tel)	PO #: C20525101 exp 05312023			
Email: RFENSTEMACHER@hbws.org	WO #:			
Project Name: RED-HILL	Project #: 38001111			
Site: Hawaii	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	537.1_DW_PREC - 537.1 Full List	533 - All Analytes	Total Number of containers	Special Instructions/Note:
			Preservation Code:				Y	N		
HALAWA SHAFT	12/5/22	945		Water			3	3		
MOANALUA WELLS				Water						
FB: HALAWA SHAFT	12/5/22	945		Water			2	2		
FB: MOANALUA WELLS				Water						

380-30484 COC

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: FED EX 7706 9464 2730

	Date/Time	Company	Received by	Date/Time	Company
Relinquished [redacted]	12/5/22 1345	HBWS	G.REITNER	12/07/2022 09:40	EEA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: (752A) 2.6°-2.5° GEL FROZEN

Ver: 06/08/2021

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-30484-1

Login Number: 30484

List Source: Eurofins Eaton Monrovia

List Number: 1

Creator: Elyas, Matthew

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	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Erwin Kawata
City & County of Honolulu
630 South Beretania Street
Public Service Bldg. Room 310
Honolulu, Hawaii 96843

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JOB DESCRIPTION

RED-HILL
Weekly PFAS

JOB NUMBER

380-107748-1

Eurofins Eaton Analytical Pomona
941 Corporate Center Drive
Pomona CA 91768-2642

See page two for job notes and contact information.

Eurofins Eaton Analytical Pomona

Job Notes

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

The test results in this report relate only to the samples as received by the laboratory and 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

Rachelle Arada

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Authorized for release by
Rachelle Arada, Project Manager
Rachelle.Arada@et.eurofinsus.com
(626)386-1106

Table of Contents

Definitions/Glossary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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

Job ID: 380-107748-1 — Eurofins Eaton Analytical Pomona

Job Narrative
380-107748-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 8/8/2024 9:56 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.2°C and 2.2°C.

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

Detection Summary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool — Lab Sample ID: 380-107748-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	3.2		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.3		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.8		2.0		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.0		2.0		ng/L	1		537.1	Total/NA

Client Sample ID: FB: Halawa Shaft Viewing Pool — Lab Sample ID: 380-107748-2

No Detections.

This Detection Summary does not include radiochemical test results.

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-107748-1

Date Collected: 08/06/24 09:30
Date Received: 08/08/24 09:56

Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorohexanesulfonic acid (PFHxS)	**3.2**		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorooctanesulfonic acid (PFOS)	**3.3**		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 00:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*87*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C6 PFDA	*93*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C5 PFHxA	*95*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C4 PFHpA	*95*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C8 PFOA	*92*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C9 PFNA	*92*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C7 PFUnA	*96*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C2 PFDoA	*99*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C4 PFBA	*100*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C5 PFPeA	*105*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C3 PFBS	*111*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*
13C3 PFHxS	*113*		*50 - 200*	*08/10/24 11:58*	*08/12/24 00:15*	*1*

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-107748-1
Matrix: Water
Date Collected: 08/06/24 09:30
Date Received: 08/08/24 09:56

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	110		50 - 200	08/10/24 11:58	08/12/24 00:15	1
13C2-4:2-FTS	137		50 - 200	08/10/24 11:58	08/12/24 00:15	1
13C2-6:2-FTS	124		50 - 200	08/10/24 11:58	08/12/24 00:15	1
13C2-8:2-FTS	109		50 - 200	08/10/24 11:58	08/12/24 00:15	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorooctanesulfonic acid (PFOS)	**3.8**		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorohexanesulfonic acid (PFHxS)	**4.0**		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	110		70 - 130	08/09/24 09:37	08/10/24 14:05	1
13C2 PFHxA	105		70 - 130	08/09/24 09:37	08/10/24 14:05	1
13C2 PFDA	102		70 - 130	08/09/24 09:37	08/10/24 14:05	1
13C3-GenX	97		70 - 130	08/09/24 09:37	08/10/24 14:05	1

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-107748-2
Matrix: Water
Date Collected: 08/06/24 09:30
Date Received: 08/08/24 09:56

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Client Sample ID: FB: Halawa Shaft Viewing Pool
Date Collected: 08/06/24 09:30
Date Received: 08/08/24 09:56

Lab Sample ID: 380-107748-2
Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		08/10/24 11:58	08/12/24 02:22	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*102*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C6 PFDA	*110*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C5 PFHxA	*109*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C4 PFHpA	*111*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C8 PFOA	*111*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C9 PFNA	*107*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C7 PFUnA	*110*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C2 PFDoA	*108*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C4 PFBA	*107*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C5 PFPeA	*113*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C3 PFBS	*113*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C3 PFHxS	*107*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C8 PFOS	*107*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C2-4:2-FTS	*122*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C2-6:2-FTS	*121*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*
13C2-8:2-FTS	*110*		*50 - 200*	*08/10/24 11:58*	*08/12/24 02:22*	*1*

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Client Sample ID: FB: Halawa Shaft Viewing Pool
Date Collected: 08/06/24 09:30
Date Received: 08/08/24 09:56

Lab Sample ID: 380-107748-2
Matrix: Water

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		08/09/24 09:37	08/10/24 14:16	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/09/24 09:37	08/10/24 14:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*114*		*70 - 130*	*08/09/24 09:37*	*08/10/24 14:16*	*1*
13C2 PFHxA	*104*		*70 - 130*	*08/09/24 09:37*	*08/10/24 14:16*	*1*
13C2 PFDA	*101*		*70 - 130*	*08/09/24 09:37*	*08/10/24 14:16*	*1*
13C3-GenX	*100*		*70 - 130*	*08/09/24 09:37*	*08/10/24 14:16*	*1*

Action Limit Summary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool — Lab Sample ID: 380-107748-1

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL Limit	RL	Method	Prep Type
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.2		ng/L	10	2.0	533	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.3		ng/L	4	2.0	533	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	533	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.8		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.0		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Client Sample ID: FB: Halawa Shaft Viewing Pool — Lab Sample ID: 380-107748-2

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL Limit	RL	Method	Prep Type
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	533	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	533	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Surrogate Summary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

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 (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-107722-E-2-A MS	Matrix Spike	113	106	100	101
380-107722-F-2-A MSD	Matrix Spike Duplicate	114	100	99	96
380-107748-1	Halawa Shaft Viewing Pool	110	105	102	97
380-107748-2	FB: Halawa Shaft Viewing Pool	114	104	101	100
LCS 380-103043/24-A	Lab Control Sample	109	105	102	102
MBL 380-103043/22-A	Method Blank	129	114	113	109
MRL 380-103043/23-A	Lab Control Sample	121	104	104	100

Surrogate Legend

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

Isotope Dilution Summary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

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)
380-107748-1	Halawa Shaft Viewing Pool	87	93	95	95	92	92	96	99
380-107748-1 MS	Halawa Shaft Viewing Pool	89	95	99	98	95	94	100	98
380-107748-1 MSD	Halawa Shaft Viewing Pool	81	85	90	89	78	82	90	92
380-107748-2	FB: Halawa Shaft Viewing Pool	102	110	109	111	111	107	110	108
LCS 380-103195/24-A	Lab Control Sample	100	110	111	115	113	112	106	107
MBL 380-103195/22-A	Method Blank	100	115	115	122	115	114	114	113
MRL 380-103195/23-A	Lab Control Sample	104	112	117	117	112	115	114	111

		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)
380-107748-1	Halawa Shaft Viewing Pool	100	105	111	113	110	137	124	109
380-107748-1 MS	Halawa Shaft Viewing Pool	98	103	116	115	113	143	127	109
380-107748-1 MSD	Halawa Shaft Viewing Pool	97	97	120	118	114	141	125	111
380-107748-2	FB: Halawa Shaft Viewing Pool	107	113	113	107	107	122	121	110
LCS 380-103195/24-A	Lab Control Sample	116	121	115	118	114	128	124	111
MBL 380-103195/22-A	Method Blank	117	120	116	120	115	140	131	120
MRL 380-103195/23-A	Lab Control Sample	116	119	116	120	115	125	132	116

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

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

Lab Sample ID: MBL 380-103195/22-A
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103195

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.25		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0		ng/L		08/10/24 11:58	08/11/24 23:44	1

Isotope Dilution	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C6 PFDA	*115*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C5 PFHxA	*115*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C4 PFHpA	*122*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C8 PFOA	*115*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C9 PFNA	*114*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C7 PFUnA	*114*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C2 PFDoA	*113*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C4 PFBA	*117*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C5 PFPeA	*120*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C3 PFBS	*116*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*
13C3 PFHxS	*120*		*50 - 200*	*08/10/24 11:58*	*08/11/24 23:44*	*1*

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

Lab Sample ID: MBL 380-103195/22-A
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103195

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	115		50 - 200	08/10/24 11:58	08/11/24 23:44	1
13C2-4:2-FTS	140		50 - 200	08/10/24 11:58	08/11/24 23:44	1
13C2-6:2-FTS	131		50 - 200	08/10/24 11:58	08/11/24 23:44	1
13C2-8:2-FTS	120		50 - 200	08/10/24 11:58	08/11/24 23:44	1

Lab Sample ID: LCS 380-103195/24-A
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103195

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	60.0	49.8		ng/L		83	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.0	54.4		ng/L		91	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.0	52.1		ng/L		87	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.0	61.5		ng/L		102	70 - 130
Perfluorobutanesulfonic acid (PFBS)	60.0	57.5		ng/L		96	70 - 130
Perfluorodecanoic acid (PFDA)	60.0	54.8		ng/L		91	70 - 130
Perfluorododecanoic acid (PFDoA)	60.0	58.2		ng/L		97	70 - 130
Perfluoroheptanoic acid (PFHpA)	60.0	56.9		ng/L		95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	60.0	53.5		ng/L		89	70 - 130
Perfluorohexanoic acid (PFHxA)	60.0	55.4		ng/L		92	70 - 130
Perfluorononanoic acid (PFNA)	60.0	54.9		ng/L		92	70 - 130
Perfluorooctanesulfonic acid (PFOS)	60.0	56.1		ng/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	60.0	56.6		ng/L		94	70 - 130
Perfluoroundecanoic acid (PFUnA)	60.0	59.7		ng/L		99	70 - 130
Perfluorobutanoic acid (PFBA)	60.0	54.2		ng/L		90	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.0	56.4		ng/L		94	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.0	53.9		ng/L		90	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.0	55.0		ng/L		92	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.0	57.4		ng/L		96	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.0	54.5		ng/L		91	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.0	56.4		ng/L		94	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.0	56.6		ng/L		94	70 - 130
Perfluoropentanoic acid (PFPeA)	60.0	52.9		ng/L		88	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.0	55.5		ng/L		92	70 - 130

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

Lab Sample ID: LCS 380-103195/24-A
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103195

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluoropentanesulfonic acid (PFPeS)			60.0	50.1		ng/L		83	70 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*100*		*50 - 200*
13C6 PFDA	*110*		*50 - 200*
13C5 PFHxA	*111*		*50 - 200*
13C4 PFHpA	*115*		*50 - 200*
13C8 PFOA	*113*		*50 - 200*
13C9 PFNA	*112*		*50 - 200*
13C7 PFUnA	*106*		*50 - 200*
13C2 PFDoA	*107*		*50 - 200*
13C4 PFBA	*116*		*50 - 200*
13C5 PFPeA	*121*		*50 - 200*
13C3 PFBS	*115*		*50 - 200*
13C3 PFHxS	*118*		*50 - 200*
13C8 PFOS	*114*		*50 - 200*
13C2-4:2-FTS	*128*		*50 - 200*
13C2-6:2-FTS	*124*		*50 - 200*
13C2-8:2-FTS	*111*		*50 - 200*

Lab Sample ID: MRL 380-103195/23-A
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103195

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			2.00	1.84	J	ng/L		92	50 - 150		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			2.00	1.96	J	ng/L		98	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			2.00	1.96	J	ng/L		98	50 - 150		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			2.00	2.25	J	ng/L		112	50 - 150		
Perfluorobutanesulfonic acid (PFBS)			2.00	2.06	J	ng/L		103	50 - 150		
Perfluorodecanoic acid (PFDA)			2.00	2.07	J	ng/L		103	50 - 150		
Perfluorododecanoic acid (PFDoA)			2.00	2.23	J	ng/L		111	50 - 150		
Perfluoroheptanoic acid (PFHpA)			2.00	2.07	J	ng/L		103	50 - 150		
Perfluorohexanesulfonic acid (PFHxS)			2.00	1.97	J	ng/L		98	50 - 150		
Perfluorohexanoic acid (PFHxA)			2.00	2.06	J	ng/L		103	50 - 150		
Perfluorononanoic acid (PFNA)			2.00	1.99	J	ng/L		99	50 - 150		
Perfluorooctanesulfonic acid (PFOS)			2.00	2.15	J	ng/L		107	50 - 150		
Perfluorooctanoic acid (PFOA)			2.00	2.15	J	ng/L		108	50 - 150		
Perfluoroundecanoic acid (PFUnA)			2.00	2.08	J	ng/L		104	50 - 150		
Perfluorobutanoic acid (PFBA)			2.00	2.29	J	ng/L		114	50 - 150		

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

Lab Sample ID: MRL 380-103195/23-A
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103195

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.26	J	ng/L		113	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.41	J	ng/L		120	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.10	J	ng/L		105	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	2.09	J	ng/L		104	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	2.00	2.06	J	ng/L		103	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.12	J	ng/L		106	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	2.02	J	ng/L		101	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.05	J	ng/L		102	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	2.10	J	ng/L		105	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	1.90	J	ng/L		95	50 - 150

Isotope Dilution	*MRL %Recovery*	*MRL Qualifier*	*Limits*
13C3 HFPO-DA	*104*		*50 - 200*
13C6 PFDA	*112*		*50 - 200*
13C5 PFHxA	*117*		*50 - 200*
13C4 PFHpA	*117*		*50 - 200*
13C8 PFOA	*112*		*50 - 200*
13C9 PFNA	*115*		*50 - 200*
13C7 PFUnA	*114*		*50 - 200*
13C2 PFDoA	*111*		*50 - 200*
13C4 PFBA	*116*		*50 - 200*
13C5 PFPeA	*119*		*50 - 200*
13C3 PFBS	*116*		*50 - 200*
13C3 PFHxS	*120*		*50 - 200*
13C8 PFOS	*115*		*50 - 200*
13C2-4:2-FTS	*125*		*50 - 200*
13C2-6:2-FTS	*132*		*50 - 200*
13C2-8:2-FTS	*116*		*50 - 200*

Lab Sample ID: 380-107748-1 MS
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Halawa Shaft Viewing Pool
Prep Type: Total/NA
Prep Batch: 103195

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.4	50.2		ng/L		83	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.4	52.3		ng/L		87	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.4	51.3		ng/L		85	70 - 130

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

Lab Sample ID: 380-107748-1 MS
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Halawa Shaft Viewing Pool
Prep Type: Total/NA
Prep Batch: 103195

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		60.4	60.2		ng/L		100	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		60.4	58.3		ng/L		96	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		60.4	56.0		ng/L		93	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		60.4	57.3		ng/L		95	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		60.4	57.4		ng/L		94	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	3.2		60.4	59.5		ng/L		93	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		60.4	57.2		ng/L		93	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		60.4	57.7		ng/L		96	70 - 130
Perfluorooctanesulfonic acid (PFOS)	3.3		60.4	59.6		ng/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		60.4	61.2		ng/L		100	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		60.4	54.9		ng/L		91	70 - 130
Perfluorobutanoic acid (PFBA)	<2.0		60.4	57.5		ng/L		95	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.4	57.8		ng/L		96	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.4	54.1		ng/L		90	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.4	57.4		ng/L		95	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.4	54.3		ng/L		90	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.4	53.1		ng/L		88	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.4	57.3		ng/L		95	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.4	55.6		ng/L		92	70 - 130
Perfluoropentanoic acid (PFPeA)	<2.0		60.4	59.2		ng/L		97	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.4	55.5		ng/L		92	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.4	53.4		ng/L		88	70 - 130

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3 HFPO-DA	*89*		*50 - 200*
13C6 PFDA	*95*		*50 - 200*
13C5 PFHxA	*99*		*50 - 200*
13C4 PFHpA	*98*		*50 - 200*
13C8 PFOA	*95*		*50 - 200*
13C9 PFNA	*94*		*50 - 200*
13C7 PFUnA	*100*		*50 - 200*
13C2 PFDoA	*98*		*50 - 200*
13C4 PFBA	*98*		*50 - 200*
13C5 PFPeA	*103*		*50 - 200*
13C3 PFBS	*116*		*50 - 200*
13C3 PFHxS	*115*		*50 - 200*
13C8 PFOS	*113*		*50 - 200*

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

Lab Sample ID: 380-107748-1 MS
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Halawa Shaft Viewing Pool
Prep Type: Total/NA
Prep Batch: 103195

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C2-4:2-FTS	143		50 - 200
13C2-6:2-FTS	127		50 - 200
13C2-8:2-FTS	109		50 - 200

Lab Sample ID: 380-107748-1 MSD
Matrix: Water
Analysis Batch: 103222

Client Sample ID: Halawa Shaft Viewing Pool
Prep Type: Total/NA
Prep Batch: 103195

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.4	48.3		ng/L		80	70 - 130	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.4	53.9		ng/L		89	70 - 130	3	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.4	48.5		ng/L		80	70 - 130	6	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		60.4	59.1		ng/L		98	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		60.4	55.4		ng/L		91	70 - 130	5	30
Perfluorodecanoic acid (PFDA)	<2.0		60.4	55.3		ng/L		92	70 - 130	1	30
Perfluorododecanoic acid (PFDoA)	<2.0		60.4	56.2		ng/L		93	70 - 130	2	30
Perfluoroheptanoic acid (PFHpA)	<2.0		60.4	54.8		ng/L		90	70 - 130	5	30
Perfluorohexanesulfonic acid (PFHxS)	3.2		60.4	56.3		ng/L		88	70 - 130	5	30
Perfluorohexanoic acid (PFHxA)	<2.0		60.4	55.7		ng/L		90	70 - 130	3	30
Perfluorononanoic acid (PFNA)	<2.0		60.4	55.0		ng/L		91	70 - 130	5	30
Perfluorooctanesulfonic acid (PFOS)	3.3		60.4	59.6		ng/L		93	70 - 130	0	30
Perfluorooctanoic acid (PFOA)	<2.0		60.4	59.3		ng/L		97	70 - 130	3	30
Perfluoroundecanoic acid (PFUnA)	<2.0		60.4	55.9		ng/L		93	70 - 130	2	30
Perfluorobutanoic acid (PFBA)	<2.0		60.4	55.6		ng/L		92	70 - 130	4	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.4	59.9		ng/L		99	70 - 130	3	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.4	55.4		ng/L		92	70 - 130	2	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.4	59.1		ng/L		98	70 - 130	3	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.4	53.5		ng/L		89	70 - 130	2	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.4	52.0		ng/L		86	70 - 130	2	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.4	55.5		ng/L		92	70 - 130	3	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.4	52.7		ng/L		87	70 - 130	5	30
Perfluoropentanoic acid (PFPeA)	<2.0		60.4	59.4		ng/L		97	70 - 130	0	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.4	57.1		ng/L		95	70 - 130	3	30
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.4	52.1		ng/L		86	70 - 130	2	30

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

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C3 HFPO-DA	81		50 - 200
13C6 PFDA	85		50 - 200
13C5 PFHxA	90		50 - 200
13C4 PFHpA	89		50 - 200
13C8 PFOA	78		50 - 200
13C9 PFNA	82		50 - 200
13C7 PFUnA	90		50 - 200
13C2 PFDoA	92		50 - 200
13C4 PFBA	97		50 - 200
13C5 PFPeA	97		50 - 200
13C3 PFBS	120		50 - 200
13C3 PFHxS	118		50 - 200
13C8 PFOS	114		50 - 200
13C2-4:2-FTS	141		50 - 200
13C2-6:2-FTS	125		50 - 200
13C2-8:2-FTS	111		50 - 200

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

Lab Sample ID: MBL 380-103043/22-A
Matrix: Water
Analysis Batch: 103183

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103043

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		08/09/24 09:37	08/10/24 09:56	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		08/09/24 09:37	08/10/24 09:56	1

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	129		70 - 130	08/09/24 09:37	08/10/24 09:56	1
13C2 PFHxA	114		70 - 130	08/09/24 09:37	08/10/24 09:56	1
13C2 PFDA	113		70 - 130	08/09/24 09:37	08/10/24 09:56	1

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

Lab Sample ID: MBL 380-103043/22-A
Matrix: Water
Analysis Batch: 103183

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 103043

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-GenX	109		70 - 130	08/09/24 09:37	08/10/24 09:56	1

Lab Sample ID: LCS 380-103043/24-A
Matrix: Water
Analysis Batch: 103183

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	50.2	50.0		ng/L		100	70 - 130
Perfluorooctanesulfonic acid (PFOS)	50.2	52.9		ng/L		105	70 - 130
Perfluoroundecanoic acid (PFUnA)	50.2	50.9		ng/L		101	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	50.2	53.9		ng/L		107	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	50.2	55.9		ng/L		111	70 - 130
Perfluorohexanoic acid (PFHxA)	50.2	52.3		ng/L		104	70 - 130
Perfluorododecanoic acid (PFDoA)	50.2	50.2		ng/L		100	70 - 130
Perfluorooctanoic acid (PFOA)	50.2	52.3		ng/L		104	70 - 130
Perfluorodecanoic acid (PFDA)	50.2	50.2		ng/L		100	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	50.2	57.5		ng/L		115	70 - 130
Perfluorobutanesulfonic acid (PFBS)	50.2	53.2		ng/L		106	70 - 130
Perfluoroheptanoic acid (PFHpA)	50.2	54.9		ng/L		109	70 - 130
Perfluorononanoic acid (PFNA)	50.2	52.1		ng/L		104	70 - 130
Perfluorotetradecanoic acid (PFTA)	50.2	49.1		ng/L		98	70 - 130
Perfluorotridecanoic acid (PFTrDA)	50.2	49.8		ng/L		99	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	50.2	49.1		ng/L		98	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	50.2	51.3		ng/L		102	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	50.2	45.2		ng/L		90	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
d5-NEtFOSAA	109		70 - 130
13C2 PFHxA	105		70 - 130
13C2 PFDA	102		70 - 130
13C3-GenX	102		70 - 130

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

Lab Sample ID: MRL 380-103043/23-A
Matrix: Water
Analysis Batch: 103183

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 103043

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)	2.01	2.41	J	ng/L		120	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.01	2.37	J	ng/L		118	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.01	2.42	J	ng/L		121	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.01	2.69	J	ng/L		134	50 - 150
Perfluorohexanoic acid (PFHxA)	2.01	2.39	J	ng/L		119	50 - 150
Perfluorododecanoic acid (PFDoA)	2.01	2.29	J	ng/L		114	50 - 150
Perfluorooctanoic acid (PFOA)	2.01	2.38	J	ng/L		118	50 - 150
Perfluorodecanoic acid (PFDA)	2.01	2.21	J	ng/L		110	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.01	2.61	J	ng/L		130	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.01	2.23	J	ng/L		111	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.01	2.56	J	ng/L		128	50 - 150
Perfluorononanoic acid (PFNA)	2.01	2.47	J	ng/L		123	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.01	2.45	J	ng/L		122	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.01	2.25	J	ng/L		112	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.01	2.13	J	ng/L		106	50 - 150
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.01	2.17	J	ng/L		108	50 - 150
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.01	2.17	J	ng/L		108	50 - 150

Surrogate	*MRL %Recovery*	*MRL Qualifier*	*Limits*
d5-NEtFOSAA	*121*		*70 - 130*
13C2 PFHxA	*104*		*70 - 130*
13C2 PFDA	*104*		*70 - 130*
13C3-GenX	*100*		*70 - 130*

Lab Sample ID: 380-107722-E-2-A MS
Matrix: Water
Analysis Batch: 103183

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 103043

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		50.2	47.2		ng/L		94	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		50.2	52.1		ng/L		103	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		50.2	49.5		ng/L		99	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.2	52.6		ng/L		105	70 - 130

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

Lab Sample ID: 380-107722-E-2-A MS
Matrix: Water
Analysis Batch: 103183

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 103043

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.2	55.8		ng/L		111	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		50.2	51.7		ng/L		100	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		50.2	47.7		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		50.2	54.2		ng/L		105	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		50.2	47.7		ng/L		95	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	2.1		50.2	56.9		ng/L		109	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		50.2	50.1		ng/L		98	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		50.2	52.8		ng/L		104	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		50.2	50.1		ng/L		100	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		50.2	50.0		ng/L		100	70 - 130
Perfluorotridecanoic acid (PFTrDA)	<2.0		50.2	46.5		ng/L		93	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		50.2	47.3		ng/L		94	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		50.2	49.5		ng/L		99	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		50.2	44.4		ng/L		89	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
d5-NEtFOSAA	*113*		*70 - 130*
13C2 PFHxA	*106*		*70 - 130*
13C2 PFDA	*100*		*70 - 130*
13C3-GenX	*101*		*70 - 130*

Lab Sample ID: 380-107722-F-2-A MSD
Matrix: Water
Analysis Batch: 103183

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 103043

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	48.5		ng/L		97	70 - 130	3	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		50.1	53.0		ng/L		105	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)	<2.0		50.1	49.8		ng/L		99	70 - 130	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.1	55.4		ng/L		111	70 - 130	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.1	57.0		ng/L		114	70 - 130	2	30
Perfluorohexanoic acid (PFHxA)	<2.0		50.1	52.2		ng/L		102	70 - 130	1	30
Perfluorododecanoic acid (PFDoA)	<2.0		50.1	48.1		ng/L		96	70 - 130	1	30
Perfluorooctanoic acid (PFOA)	<2.0		50.1	53.0		ng/L		103	70 - 130	2	30
Perfluorodecanoic acid (PFDA)	<2.0		50.1	48.6		ng/L		97	70 - 130	2	30

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

Lab Sample ID: 380-107722-F-2-A MSD
Matrix: Water
Analysis Batch: 103183

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 103043

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanesulfonic acid (PFHxS)	2.1		50.1	56.7		ng/L		109	70 - 130	0	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		50.1	49.4		ng/L		97	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)	<2.0		50.1	52.5		ng/L		104	70 - 130	1	30
Perfluorononanoic acid (PFNA)	<2.0		50.1	51.0		ng/L		102	70 - 130	2	30
Perfluorotetradecanoic acid (PFTA)	<2.0		50.1	50.5		ng/L		101	70 - 130	1	30
Perfluorotridecanoic acid (PFTrDA)	<2.0		50.1	48.5		ng/L		97	70 - 130	4	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		50.1	47.9		ng/L		96	70 - 130	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		50.1	51.6		ng/L		103	70 - 130	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		50.1	45.7		ng/L		91	70 - 130	3	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
d5-NEtFOSAA	*114*		*70 - 130*
13C2 PFHxA	*100*		*70 - 130*
13C2 PFDA	*99*		*70 - 130*
13C3-GenX	*96*		*70 - 130*

QC Association Summary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

LCMS

Prep Batch: 103043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-107748-1	Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
380-107748-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
MBL 380-103043/22-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-103043/24-A	Lab Control Sample	Total/NA	Water	537.1 DW	
MRL 380-103043/23-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-107722-E-2-A MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-107722-F-2-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	

Analysis Batch: 103183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-107748-1	Halawa Shaft Viewing Pool	Total/NA	Water	537.1	103043
380-107748-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	537.1	103043
MBL 380-103043/22-A	Method Blank	Total/NA	Water	537.1	103043
LCS 380-103043/24-A	Lab Control Sample	Total/NA	Water	537.1	103043
MRL 380-103043/23-A	Lab Control Sample	Total/NA	Water	537.1	103043
380-107722-E-2-A MS	Matrix Spike	Total/NA	Water	537.1	103043
380-107722-F-2-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	103043

Prep Batch: 103195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-107748-1	Halawa Shaft Viewing Pool	Total/NA	Water	533	
380-107748-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	533	
MBL 380-103195/22-A	Method Blank	Total/NA	Water	533	
LCS 380-103195/24-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-103195/23-A	Lab Control Sample	Total/NA	Water	533	
380-107748-1 MS	Halawa Shaft Viewing Pool	Total/NA	Water	533	
380-107748-1 MSD	Halawa Shaft Viewing Pool	Total/NA	Water	533	

Analysis Batch: 103222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-107748-1	Halawa Shaft Viewing Pool	Total/NA	Water	533	103195
380-107748-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	533	103195
MBL 380-103195/22-A	Method Blank	Total/NA	Water	533	103195
LCS 380-103195/24-A	Lab Control Sample	Total/NA	Water	533	103195
MRL 380-103195/23-A	Lab Control Sample	Total/NA	Water	533	103195
380-107748-1 MS	Halawa Shaft Viewing Pool	Total/NA	Water	533	103195
380-107748-1 MSD	Halawa Shaft Viewing Pool	Total/NA	Water	533	103195

Lab Chronicle

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-107748-1

Date Collected: 08/06/24 09:30
Date Received: 08/08/24 09:56

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			103195	E9PK	EA POM	08/10/24 11:58
Total/NA	Analysis	533		1	103222	SZ9R	EA POM	08/12/24 00:15
Total/NA	Prep	537.1 DW			103043	A5GB	EA POM	08/09/24 09:37
Total/NA	Analysis	537.1		1	103183	Y5FM	EA POM	08/10/24 14:05

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-107748-2

Date Collected: 08/06/24 09:30
Date Received: 08/08/24 09:56

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			103195	E9PK	EA POM	08/10/24 11:58
Total/NA	Analysis	533		1	103222	SZ9R	EA POM	08/12/24 02:22
Total/NA	Prep	537.1 DW			103043	A5GB	EA POM	08/09/24 09:37
Total/NA	Analysis	537.1		1	103183	Y5FM	EA POM	08/10/24 14:16

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Laboratory: Eurofins Eaton Analytical Pomona

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-25

Method Summary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA POM
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA POM
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA POM
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA POM

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

Job ID: 380-107748-1
SDG: Weekly PFAS

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
380-107748-1	Halawa Shaft Viewing Pool	Water	08/06/24 09:30	08/08/24 09:56
380-107748-2	FB: Halawa Shaft Viewing Pool	Water	08/06/24 09:30	08/08/24 09:56

Eurofins Eaton Analytical Pomona
941 Corporate Center Drive
Pomona CA 91768-2642
Phone (626) 386 1100

Chain of Custody Record

eurofins

380-107748 COC

Client Information	Sampler: EJ	Lab PM: Arada Rachelle	Carrier Tracking No(s):	COC No: 380-28005-2757 1
Client Contact: Dr Ron Fenstemacher	Phone: 808-748-5840	E-Mail: Rachelle.Arada@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: City & County of Honolulu	PWSID:			Job #:
Address: 630 South Beretania Street Chemistry Lab	Due Date Requested:			
City: Honolulu	TAT Requested (days):			
State, Zip: HI 96843	Compliance Project: Δ Yes Δ No			
Phone: 808-748-5091(Tel)	PO #: C20525101 exp 05312023			
Email: RFENSTEMACHER@hbws org	WO #:			
Project Name: RED-HILL/HBWS Sites Event Desc: RUSH Weekly Red Hill	Project #: 38001111			
Site: Hawaii	SSOW#:			

Analysis Requested

Preservation Codes:
R NaThioSO4
RA NaThio/HCl
Q Na2SO3
QA Na2SO3/HCl
Y Trizma
I NH4 Acetate
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=wasteoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	625 1, 625.1_SIM	8015B_GRO_LL (MOD) GRO	8015B_DRO_LL_CS HNL Ranges C10-C24/C24-C36/C8-C18	525 2_PREC (MOD) 525plus Plus TICs	537 1_DW_PREC 537 1 Full List	533 All Analytes	Total Number of containers	Special Instructions/Note
			Preservation Code		X	X	R	RA	Q	QA	Y	I	X	
Halawa Shaft Viewing Pool	8/6/24	0930	G	Water							3	3		
FB Halawa Shaft Viewing Pool	8/6/24	0930		Water							1	1		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I II III IV Other (specify)

Special Instructions/QC Requirements: ① 7778 5007 0860 ② 7778 5007 0871

Empty Kit Relinquished by: [redacted] Date: Time: Method of Shipment: FEDEX ③ 7778 5007 0882

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[redacted]	8/7/24 1200		G.REITNER	08/08/2024 09:56	EEAP
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No:

Cooler Temperature(s) °C and Other Remarks: 751A ① 1.3°-0.1°=1.2° ② 2.3°-0.1°=2.2° ③ 1.0°-0.1°=0.9° GEL-FROZEN

Ver: 04/02/2024

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-107748-1
SDG Number: Weekly PFAS

Login Number: 107748
List Number: 1
Creator: Gerfen, Chris

List Source: Eurofins Eaton Analytical Pomona

Question	Answer	Comment
The coolers custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
Samples were received on ice.	True	
Cooler(s) Temperature is acceptable.	True	
Cooler(s) Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and is 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").	N/A	
ClO4 headspace requirement met (>50% for CA, >30% for other states).	N/A	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Erwin Kawata
City & County of Honolulu
630 South Beretania Street
Public Service Bldg. Room 310
Honolulu, Hawaii 96843

Generated 8/29/2024 9:41:19 AM

JOB DESCRIPTION

RED-HILL
Weekly PFAS

JOB NUMBER

380-109897-1

Eurofins Eaton Analytical Pomona
941 Corporate Center Drive
Pomona CA 91768-2642

See page two for job notes and contact information.

Eurofins Eaton Analytical Pomona

Job Notes

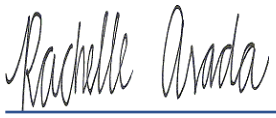
This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

Compliance Statement

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

Authorization



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Authorized for release by
Rachelle Arada, Project Manager
Rachelle.Arada@et.eurofinsus.com
(626)386-1106

Table of Contents

Definitions/Glossary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Qualifiers

LCMS

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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

Job Narrative
380-109897-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 8/22/2024 9:53 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.4°C.

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

Detection Summary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool — Lab Sample ID: 380-109897-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	3.5		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.3		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.6		2.0		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.0		2.0		ng/L	1		537.1	Total/NA

Client Sample ID: FB: Halawa Shaft Viewing Pool — Lab Sample ID: 380-109897-2

No Detections.

This Detection Summary does not include radiochemical test results.

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool

Date Collected: 08/20/24 09:40
Date Received: 08/22/24 09:53

Lab Sample ID: 380-109897-1

Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorohexanesulfonic acid (PFHxS)	**3.5**		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorooctanesulfonic acid (PFOS)	**3.3**		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		08/24/24 10:11	08/27/24 18:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*64*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C6 PFDA	*92*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C5 PFHxA	*91*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C4 PFHpA	*90*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C8 PFOA	*89*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C9 PFNA	*91*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C7 PFUnA	*94*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C2 PFDoA	*92*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C4 PFBA	*90*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C5 PFPeA	*93*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C3 PFBS	*103*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*
13C3 PFHxS	*104*		*50 - 200*	*08/24/24 10:11*	*08/27/24 18:33*	*1*

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-109897-1
Date Collected: 08/20/24 09:40
Matrix: Water
Date Received: 08/22/24 09:53

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	101		50 - 200	08/24/24 10:11	08/27/24 18:33	1
13C2-4:2-FTS	135		50 - 200	08/24/24 10:11	08/27/24 18:33	1
13C2-6:2-FTS	114		50 - 200	08/24/24 10:11	08/27/24 18:33	1
13C2-8:2-FTS	102		50 - 200	08/24/24 10:11	08/27/24 18:33	1

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorooctanesulfonic acid (PFOS)	**3.6**		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorohexanesulfonic acid (PFHxS)	**4.0**		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	121		70 - 130	08/26/24 10:24	08/27/24 09:12	1
13C2 PFHxA	111		70 - 130	08/26/24 10:24	08/27/24 09:12	1
13C2 PFDA	107		70 - 130	08/26/24 10:24	08/27/24 09:12	1
13C3-GenX	96		70 - 130	08/26/24 10:24	08/27/24 09:12	1

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-109897-2
Date Collected: 08/20/24 09:40
Matrix: Water
Date Received: 08/22/24 09:53

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Client Sample ID: FB: Halawa Shaft Viewing Pool
Date Collected: 08/20/24 09:40
Date Received: 08/22/24 09:53

Lab Sample ID: 380-109897-2
Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		08/24/24 10:11	08/26/24 12:41	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*74*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C6 PFDA	*85*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C5 PFHxA	*91*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C4 PFHpA	*94*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C8 PFOA	*92*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C9 PFNA	*89*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C7 PFUnA	*84*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C2 PFDoA	*78*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C4 PFBA	*95*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C5 PFPeA	*93*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C3 PFBS	*109*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C3 PFHxS	*108*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C8 PFOS	*100*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C2-4:2-FTS	*134*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C2-6:2-FTS	*137*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*
13C2-8:2-FTS	*113*		*50 - 200*	*08/24/24 10:11*	*08/26/24 12:41*	*1*

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Client Sample ID: FB: Halawa Shaft Viewing Pool

Date Collected: 08/20/24 09:40
Date Received: 08/22/24 09:53

Lab Sample ID: 380-109897-2

Matrix: Water

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		08/26/24 10:24	08/27/24 09:21	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/26/24 10:24	08/27/24 09:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*117*		*70 - 130*	*08/26/24 10:24*	*08/27/24 09:21*	*1*
13C2 PFHxA	*109*		*70 - 130*	*08/26/24 10:24*	*08/27/24 09:21*	*1*
13C2 PFDA	*109*		*70 - 130*	*08/26/24 10:24*	*08/27/24 09:21*	*1*
13C3-GenX	*95*		*70 - 130*	*08/26/24 10:24*	*08/27/24 09:21*	*1*

Action Limit Summary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool — Lab Sample ID: 380-109897-1

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL Limit	RL	Method	Prep Type
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.5		ng/L	10	2.0	533	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.3		ng/L	4	2.0	533	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	533	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.6		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.0		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Client Sample ID: FB: Halawa Shaft Viewing Pool — Lab Sample ID: 380-109897-2

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL Limit	RL	Method	Prep Type
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	533	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	533	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Surrogate Summary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

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 (70-130)	PFHxA (70-130)	PFDA (70-130)	GenX (70-130)
380-109897-1	Halawa Shaft Viewing Pool	121	111	107	96
380-109897-2	FB: Halawa Shaft Viewing Pool	117	109	109	95
380-109962-B-1-A MS	Matrix Spike	113	113	112	99
380-109962-C-1-A MSD	Matrix Spike Duplicate	120	107	110	93
LCS 380-105350/21-A	Lab Control Sample	116	112	107	102
MBL 380-105350/19-A	Method Blank	119	113	123	100
MRL 380-105350/20-A	Lab Control Sample	118	112	123	98

Surrogate Legend

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

Isotope Dilution Summary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

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)
380-109897-1	Halawa Shaft Viewing Pool	64	92	91	90	89	91	94	92
380-109897-2	FB: Halawa Shaft Viewing Pool	74	85	91	94	92	89	84	78
380-109915-B-1-A MS	Matrix Spike	72	87	86	92	90	93	97	91
380-109915-C-1-A MSD	Matrix Spike Duplicate	76	93	89	92	93	94	96	94
LCS 380-105233/24-A	Lab Control Sample	90	103	105	108	104	104	104	100
MBL 380-105233/22-A	Method Blank	93	101	105	111	108	103	104	99
MRL 380-105233/23-A	Lab Control Sample	79	100	107	113	109	105	103	97

		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)
380-109897-1	Halawa Shaft Viewing Pool	90	93	103	104	101	135	114	102
380-109897-2	FB: Halawa Shaft Viewing Pool	95	93	109	108	100	134	137	113
380-109915-B-1-A MS	Matrix Spike	87	88	113	111	102	133	133	115
380-109915-C-1-A MSD	Matrix Spike Duplicate	88	89	118	111	107	129	127	116
LCS 380-105233/24-A	Lab Control Sample	105	106	114	112	103	142	140	119
MBL 380-105233/22-A	Method Blank	107	112	115	113	107	136	140	122
MRL 380-105233/23-A	Lab Control Sample	109	107	114	117	106	146	156	120

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

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

Lab Sample ID: MBL 380-105233/22-A
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 105233

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.25		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0		ng/L		08/24/24 10:11	08/26/24 10:37	1

Isotope Dilution	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*93*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C6 PFDA	*101*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C5 PFHxA	*105*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C4 PFHpA	*111*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C8 PFOA	*108*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C9 PFNA	*103*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C7 PFUnA	*104*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C2 PFDoA	*99*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C4 PFBA	*107*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C5 PFPeA	*112*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C3 PFBS	*115*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*
13C3 PFHxS	*113*		*50 - 200*	*08/24/24 10:11*	*08/26/24 10:37*	*1*

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

Lab Sample ID: MBL 380-105233/22-A
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 105233

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	107		50 - 200	08/24/24 10:11	08/26/24 10:37	1
13C2-4:2-FTS	136		50 - 200	08/24/24 10:11	08/26/24 10:37	1
13C2-6:2-FTS	140		50 - 200	08/24/24 10:11	08/26/24 10:37	1
13C2-8:2-FTS	122		50 - 200	08/24/24 10:11	08/26/24 10:37	1

Lab Sample ID: LCS 380-105233/24-A
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 105233

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	60.2	56.2		ng/L		93	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.2	58.6		ng/L		97	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.2	58.5		ng/L		97	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.2	58.1		ng/L		96	70 - 130
Perfluorobutanesulfonic acid (PFBS)	60.2	59.3		ng/L		98	70 - 130
Perfluorodecanoic acid (PFDA)	60.2	59.5		ng/L		99	70 - 130
Perfluorododecanoic acid (PFDoA)	60.2	60.0		ng/L		100	70 - 130
Perfluoroheptanoic acid (PFHpA)	60.2	59.5		ng/L		99	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	60.2	56.7		ng/L		94	70 - 130
Perfluorohexanoic acid (PFHxA)	60.2	60.3		ng/L		100	70 - 130
Perfluorononanoic acid (PFNA)	60.2	58.6		ng/L		97	70 - 130
Perfluorooctanesulfonic acid (PFOS)	60.2	60.6		ng/L		101	70 - 130
Perfluorooctanoic acid (PFOA)	60.2	59.0		ng/L		98	70 - 130
Perfluoroundecanoic acid (PFUnA)	60.2	58.8		ng/L		98	70 - 130
Perfluorobutanoic acid (PFBA)	60.2	59.2		ng/L		98	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.2	57.7		ng/L		96	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.2	58.0		ng/L		96	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.2	56.3		ng/L		93	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.2	48.3		ng/L		80	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.2	53.3		ng/L		88	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.2	59.3		ng/L		98	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.2	60.7		ng/L		101	70 - 130
Perfluoropentanoic acid (PFPeA)	60.2	59.9		ng/L		99	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.2	60.9		ng/L		101	70 - 130

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

Lab Sample ID: LCS 380-105233/24-A
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 105233

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluoropentanesulfonic acid (PFPeS)			60.2	56.1		ng/L		93	70 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*90*		*50 - 200*
13C6 PFDA	*103*		*50 - 200*
13C5 PFHxA	*105*		*50 - 200*
13C4 PFHpA	*108*		*50 - 200*
13C8 PFOA	*104*		*50 - 200*
13C9 PFNA	*104*		*50 - 200*
13C7 PFUnA	*104*		*50 - 200*
13C2 PFDoA	*100*		*50 - 200*
13C4 PFBA	*105*		*50 - 200*
13C5 PFPeA	*106*		*50 - 200*
13C3 PFBS	*114*		*50 - 200*
13C3 PFHxS	*112*		*50 - 200*
13C8 PFOS	*103*		*50 - 200*
13C2-4:2-FTS	*142*		*50 - 200*
13C2-6:2-FTS	*140*		*50 - 200*
13C2-8:2-FTS	*119*		*50 - 200*

Lab Sample ID: MRL 380-105233/23-A
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 105233

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			2.00	1.89	J	ng/L		94	50 - 150		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			2.00	1.92	J	ng/L		96	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			2.00	1.93	J	ng/L		96	50 - 150		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			2.00	2.26	J	ng/L		113	50 - 150		
Perfluorobutanesulfonic acid (PFBS)			2.00	2.05	J	ng/L		103	50 - 150		
Perfluorodecanoic acid (PFDA)			2.00	2.18	J	ng/L		109	50 - 150		
Perfluorododecanoic acid (PFDoA)			2.00	2.21	J	ng/L		110	50 - 150		
Perfluoroheptanoic acid (PFHpA)			2.00	2.01	J	ng/L		100	50 - 150		
Perfluorohexanesulfonic acid (PFHxS)			2.00	1.93	J	ng/L		97	50 - 150		
Perfluorohexanoic acid (PFHxA)			2.00	1.99	J	ng/L		99	50 - 150		
Perfluorononanoic acid (PFNA)			2.00	2.04	J	ng/L		102	50 - 150		
Perfluorooctanesulfonic acid (PFOS)			2.00	2.04	J	ng/L		102	50 - 150		
Perfluorooctanoic acid (PFOA)			2.00	2.06	J	ng/L		103	50 - 150		
Perfluoroundecanoic acid (PFUnA)			2.00	2.13	J	ng/L		106	50 - 150		
Perfluorobutanoic acid (PFBA)			2.00	2.02	J	ng/L		101	50 - 150		

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

Lab Sample ID: MRL 380-105233/23-A
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 105233

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.05	J	ng/L		102	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.20	J	ng/L		110	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.00	J	ng/L		100	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	1.97	J	ng/L		98	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	2.00	1.77	J	ng/L		88	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	2.06	J	ng/L		103	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	2.08	J	ng/L		104	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.16	J	ng/L		108	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	2.11	J	ng/L		105	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	1.89	J	ng/L		94	50 - 150

Isotope Dilution	*MRL %Recovery*	*MRL Qualifier*	*Limits*
13C3 HFPO-DA	*79*		*50 - 200*
13C6 PFDA	*100*		*50 - 200*
13C5 PFHxA	*107*		*50 - 200*
13C4 PFHpA	*113*		*50 - 200*
13C8 PFOA	*109*		*50 - 200*
13C9 PFNA	*105*		*50 - 200*
13C7 PFUnA	*103*		*50 - 200*
13C2 PFDoA	*97*		*50 - 200*
13C4 PFBA	*109*		*50 - 200*
13C5 PFPeA	*107*		*50 - 200*
13C3 PFBS	*114*		*50 - 200*
13C3 PFHxS	*117*		*50 - 200*
13C8 PFOS	*106*		*50 - 200*
13C2-4:2-FTS	*146*		*50 - 200*
13C2-6:2-FTS	*156*		*50 - 200*
13C2-8:2-FTS	*120*		*50 - 200*

Lab Sample ID: 380-109915-B-1-A MS
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 105233

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		120	108		ng/L		90	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		120	111		ng/L		92	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		120	103		ng/L		85	70 - 130

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

Lab Sample ID: 380-109915-B-1-A MS
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 105233

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		120	120		ng/L		99	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		120	111		ng/L		93	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		120	118		ng/L		98	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		120	117		ng/L		97	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		120	112		ng/L		93	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		120	113		ng/L		94	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		120	120		ng/L		100	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		120	112		ng/L		93	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		120	118		ng/L		98	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		120	113		ng/L		94	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		120	113		ng/L		93	70 - 130
Perfluorobutanoic acid (PFBA)	<2.0		120	116		ng/L		97	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		120	112		ng/L		93	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		120	117		ng/L		97	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		120	110		ng/L		91	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		120	102		ng/L		84	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		120	100		ng/L		83	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		120	113		ng/L		94	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		120	114		ng/L		94	70 - 130
Perfluoropentanoic acid (PFPeA)	<2.0		120	118		ng/L		98	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		120	119		ng/L		99	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	<2.0		120	107		ng/L		89	70 - 130

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3 HFPO-DA	*72*		*50 - 200*
13C6 PFDA	*87*		*50 - 200*
13C5 PFHxA	*86*		*50 - 200*
13C4 PFHpA	*92*		*50 - 200*
13C8 PFOA	*90*		*50 - 200*
13C9 PFNA	*93*		*50 - 200*
13C7 PFUnA	*97*		*50 - 200*
13C2 PFDoA	*91*		*50 - 200*
13C4 PFBA	*87*		*50 - 200*
13C5 PFPeA	*88*		*50 - 200*
13C3 PFBS	*113*		*50 - 200*
13C3 PFHxS	*111*		*50 - 200*
13C8 PFOS	*102*		*50 - 200*

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

Lab Sample ID: 380-109915-B-1-A MS
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 105233

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C2-4:2-FTS	133		50 - 200
13C2-6:2-FTS	133		50 - 200
13C2-8:2-FTS	115		50 - 200

Lab Sample ID: 380-109915-C-1-A MSD
Matrix: Water
Analysis Batch: 105333

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 105233

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		120	102		ng/L		84	70 - 130	6	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		120	103		ng/L		86	70 - 130	8	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		120	103		ng/L		86	70 - 130	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		120	115		ng/L		96	70 - 130	4	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		120	107		ng/L		89	70 - 130	4	30
Perfluorodecanoic acid (PFDA)	<2.0		120	116		ng/L		96	70 - 130	2	30
Perfluorododecanoic acid (PFDoA)	<2.0		120	113		ng/L		93	70 - 130	4	30
Perfluoroheptanoic acid (PFHpA)	<2.0		120	113		ng/L		94	70 - 130	1	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		120	114		ng/L		94	70 - 130	0	30
Perfluorohexanoic acid (PFHxA)	<2.0		120	117		ng/L		97	70 - 130	3	30
Perfluorononanoic acid (PFNA)	<2.0		120	112		ng/L		93	70 - 130	0	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		120	115		ng/L		95	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	<2.0		120	111		ng/L		93	70 - 130	2	30
Perfluoroundecanoic acid (PFUnA)	<2.0		120	111		ng/L		92	70 - 130	2	30
Perfluorobutanoic acid (PFBA)	<2.0		120	114		ng/L		95	70 - 130	2	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		120	110		ng/L		91	70 - 130	2	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		120	113		ng/L		93	70 - 130	4	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		120	106		ng/L		88	70 - 130	3	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		120	104		ng/L		87	70 - 130	3	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		120	93.3		ng/L		77	70 - 130	7	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		120	113		ng/L		94	70 - 130	0	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		120	114		ng/L		94	70 - 130	0	30
Perfluoropentanoic acid (PFPeA)	<2.0		120	116		ng/L		96	70 - 130	2	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		120	113		ng/L		93	70 - 130	6	30
Perfluoropentanesulfonic acid (PFPeS)	<2.0		120	107		ng/L		89	70 - 130	0	30

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

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C3 HFPO-DA	76		50 - 200
13C6 PFDA	93		50 - 200
13C5 PFHxA	89		50 - 200
13C4 PFHpA	92		50 - 200
13C8 PFOA	93		50 - 200
13C9 PFNA	94		50 - 200
13C7 PFUnA	96		50 - 200
13C2 PFDoA	94		50 - 200
13C4 PFBA	88		50 - 200
13C5 PFPeA	89		50 - 200
13C3 PFBS	118		50 - 200
13C3 PFHxS	111		50 - 200
13C8 PFOS	107		50 - 200
13C2-4:2-FTS	129		50 - 200
13C2-6:2-FTS	127		50 - 200
13C2-8:2-FTS	116		50 - 200

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

Lab Sample ID: MBL 380-105350/19-A
Matrix: Water
Analysis Batch: 105489

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 105350

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		08/26/24 10:24	08/27/24 06:29	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		08/26/24 10:24	08/27/24 06:29	1

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
d5-NEtFOSAA	119		70 - 130	08/26/24 10:24	08/27/24 06:29	1
13C2 PFHxA	113		70 - 130	08/26/24 10:24	08/27/24 06:29	1
13C2 PFDA	123		70 - 130	08/26/24 10:24	08/27/24 06:29	1

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

Lab Sample ID: MBL 380-105350/19-A
Matrix: Water
Analysis Batch: 105489

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 105350

Surrogate	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-GenX	100		70 - 130	08/26/24 10:24	08/27/24 06:29	1

Lab Sample ID: LCS 380-105350/21-A
Matrix: Water
Analysis Batch: 105489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 105350

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	25.1	22.0		ng/L		88	70 - 130
Perfluorooctanesulfonic acid (PFOS)	25.1	25.3		ng/L		101	70 - 130
Perfluoroundecanoic acid (PFUnA)	25.1	26.3		ng/L		105	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	25.1	25.1		ng/L		100	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	25.1	27.2		ng/L		109	70 - 130
Perfluorohexanoic acid (PFHxA)	25.1	26.5		ng/L		106	70 - 130
Perfluorododecanoic acid (PFDoA)	25.1	25.8		ng/L		103	70 - 130
Perfluorooctanoic acid (PFOA)	25.1	27.4		ng/L		109	70 - 130
Perfluorodecanoic acid (PFDA)	25.1	26.4		ng/L		105	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	25.1	25.8		ng/L		103	70 - 130
Perfluorobutanesulfonic acid (PFBS)	25.1	23.9		ng/L		95	70 - 130
Perfluoroheptanoic acid (PFHpA)	25.1	27.2		ng/L		109	70 - 130
Perfluorononanoic acid (PFNA)	25.1	26.1		ng/L		104	70 - 130
Perfluorotetradecanoic acid (PFTA)	25.1	24.4		ng/L		97	70 - 130
Perfluorotridecanoic acid (PFTrDA)	25.1	27.3		ng/L		109	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	25.1	24.0		ng/L		96	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	25.1	23.6		ng/L		94	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	25.1	25.7		ng/L		103	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
d5-NEtFOSAA	116		70 - 130
13C2 PFHxA	112		70 - 130
13C2 PFDA	107		70 - 130
13C3-GenX	102		70 - 130

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

Lab Sample ID: MRL 380-105350/20-A
Matrix: Water
Analysis Batch: 105489

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 105350

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			2.01	1.82	J	ng/L		90	50 - 150		
Perfluorooctanesulfonic acid (PFOS)			2.01	2.14	J	ng/L		107	50 - 150		
Perfluoroundecanoic acid (PFUnA)			2.01	2.24	J	ng/L		111	50 - 150		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			2.01	2.09	J	ng/L		104	50 - 150		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			2.01	2.29	J	ng/L		114	50 - 150		
Perfluorohexanoic acid (PFHxA)			2.01	2.34	J	ng/L		116	50 - 150		
Perfluorododecanoic acid (PFDoA)			2.01	2.07	J	ng/L		103	50 - 150		
Perfluorooctanoic acid (PFOA)			2.01	2.19	J	ng/L		109	50 - 150		
Perfluorodecanoic acid (PFDA)			2.01	2.27	J	ng/L		113	50 - 150		
Perfluorohexanesulfonic acid (PFHxS)			2.01	2.16	J	ng/L		108	50 - 150		
Perfluorobutanesulfonic acid (PFBS)			2.01	2.02	J	ng/L		101	50 - 150		
Perfluoroheptanoic acid (PFHpA)			2.01	2.29	J	ng/L		114	50 - 150		
Perfluorononanoic acid (PFNA)			2.01	2.16	J	ng/L		107	50 - 150		
Perfluorotetradecanoic acid (PFTA)			2.01	2.02	J	ng/L		101	50 - 150		
Perfluorotridecanoic acid (PFTrDA)			2.01	2.21	J	ng/L		110	50 - 150		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			2.01	2.02	J	ng/L		101	50 - 150		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			2.01	1.93	J	ng/L		96	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			2.01	2.12	J	ng/L		106	50 - 150		

Surrogate	*MRL %Recovery*	*MRL Qualifier*	*Limits*
d5-NEtFOSAA	*118*		*70 - 130*
13C2 PFHxA	*112*		*70 - 130*
13C2 PFDA	*123*		*70 - 130*
13C3-GenX	*98*		*70 - 130*

Lab Sample ID: 380-109962-B-1-A MS
Matrix: Water
Analysis Batch: 105489

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 105350

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		25.1	23.6		ng/L		94	70 - 130		
Perfluorooctanesulfonic acid (PFOS)	<2.0		25.1	26.8		ng/L		105	70 - 130		
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	26.4		ng/L		105	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	25.3		ng/L		101	70 - 130		

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

Lab Sample ID: 380-109962-B-1-A MS
Matrix: Water
Analysis Batch: 105489

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 105350

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.1	28.0		ng/L		112	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	27.1		ng/L		105	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	26.0		ng/L		104	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		25.1	28.7		ng/L		115	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		25.1	26.3		ng/L		105	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		25.1	27.0		ng/L		104	70 - 130
Perfluorobutanesulfonic acid (PFBS)	2.1		25.1	28.9		ng/L		107	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	26.9		ng/L		107	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		25.1	26.5		ng/L		106	70 - 130
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	25.0		ng/L		100	70 - 130
Perfluorotridecanoic acid (PFTrDA)	<2.0		25.1	26.1		ng/L		104	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.1	24.7		ng/L		98	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.1	24.3		ng/L		97	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.1	25.7		ng/L		103	70 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
d5-NEtFOSAA	*113*		*70 - 130*
13C2 PFHxA	*113*		*70 - 130*
13C2 PFDA	*112*		*70 - 130*
13C3-GenX	*99*		*70 - 130*

Lab Sample ID: 380-109962-C-1-A MSD
Matrix: Water
Analysis Batch: 105489

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 105350

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		25.1	21.3		ng/L		85	70 - 130	11	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		25.1	26.6		ng/L		104	70 - 130	1	30
Perfluoroundecanoic acid (PFUnA)	<2.0		25.1	26.0		ng/L		104	70 - 130	2	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		25.1	26.7		ng/L		107	70 - 130	5	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		25.1	29.5		ng/L		118	70 - 130	5	30
Perfluorohexanoic acid (PFHxA)	<2.0		25.1	26.9		ng/L		104	70 - 130	1	30
Perfluorododecanoic acid (PFDoA)	<2.0		25.1	25.5		ng/L		102	70 - 130	2	30
Perfluorooctanoic acid (PFOA)	<2.0		25.1	27.3		ng/L		109	70 - 130	5	30
Perfluorodecanoic acid (PFDA)	<2.0		25.1	25.7		ng/L		103	70 - 130	2	30

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

Lab Sample ID: 380-109962-C-1-A MSD
Matrix: Water
Analysis Batch: 105489

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 105350

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorohexanesulfonic acid (PFHxS)	<2.0		25.1	27.0		ng/L		104	70 - 130	0	30
Perfluorobutanesulfonic acid (PFBS)	2.1		25.1	26.7		ng/L		98	70 - 130	8	30
Perfluoroheptanoic acid (PFHpA)	<2.0		25.1	27.1		ng/L		108	70 - 130	1	30
Perfluorononanoic acid (PFNA)	<2.0		25.1	26.9		ng/L		107	70 - 130	2	30
Perfluorotetradecanoic acid (PFTA)	<2.0		25.1	24.4		ng/L		97	70 - 130	2	30
Perfluorotridecanoic acid (PFTrDA)	<2.0		25.1	25.8		ng/L		103	70 - 130	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		25.1	24.8		ng/L		99	70 - 130	1	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		25.1	23.2		ng/L		93	70 - 130	5	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		25.1	25.4		ng/L		101	70 - 130	1	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
d5-NEtFOSAA	*120*		*70 - 130*
13C2 PFHxA	*107*		*70 - 130*
13C2 PFDA	*110*		*70 - 130*
13C3-GenX	*93*		*70 - 130*

QC Association Summary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

LCMS

Prep Batch: 105233

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-109897-1	Halawa Shaft Viewing Pool	Total/NA	Water	533	
380-109897-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	533	
MBL 380-105233/22-A	Method Blank	Total/NA	Water	533	
LCS 380-105233/24-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-105233/23-A	Lab Control Sample	Total/NA	Water	533	
380-109915-B-1-A MS	Matrix Spike	Total/NA	Water	533	
380-109915-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	

Analysis Batch: 105333

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-109897-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	533	105233
MBL 380-105233/22-A	Method Blank	Total/NA	Water	533	105233
LCS 380-105233/24-A	Lab Control Sample	Total/NA	Water	533	105233
MRL 380-105233/23-A	Lab Control Sample	Total/NA	Water	533	105233
380-109915-B-1-A MS	Matrix Spike	Total/NA	Water	533	105233
380-109915-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	105233

Prep Batch: 105350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-109897-1	Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
380-109897-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
MBL 380-105350/19-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-105350/21-A	Lab Control Sample	Total/NA	Water	537.1 DW	
MRL 380-105350/20-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-109962-B-1-A MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-109962-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	

Analysis Batch: 105489

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-109897-1	Halawa Shaft Viewing Pool	Total/NA	Water	537.1	105350
380-109897-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	537.1	105350
MBL 380-105350/19-A	Method Blank	Total/NA	Water	537.1	105350
LCS 380-105350/21-A	Lab Control Sample	Total/NA	Water	537.1	105350
MRL 380-105350/20-A	Lab Control Sample	Total/NA	Water	537.1	105350
380-109962-B-1-A MS	Matrix Spike	Total/NA	Water	537.1	105350
380-109962-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	105350

Analysis Batch: 105568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-109897-1	Halawa Shaft Viewing Pool	Total/NA	Water	533	105233

Lab Chronicle

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-109897-1

Date Collected: 08/20/24 09:40
Date Received: 08/22/24 09:53

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			105233	E9PK	EA POM	08/24/24 10:11
Total/NA	Analysis	533		1	105568	SZ9R	EA POM	08/27/24 18:33
Total/NA	Prep	537.1 DW			105350	U7RS	EA POM	08/26/24 10:24
Total/NA	Analysis	537.1		1	105489	SZ9R	EA POM	08/27/24 09:12

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-109897-2

Date Collected: 08/20/24 09:40
Date Received: 08/22/24 09:53

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			105233	E9PK	EA POM	08/24/24 10:11
Total/NA	Analysis	533		1	105333	SZ9R	EA POM	08/26/24 12:41
Total/NA	Prep	537.1 DW			105350	U7RS	EA POM	08/26/24 10:24
Total/NA	Analysis	537.1		1	105489	SZ9R	EA POM	08/27/24 09:21

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Laboratory: Eurofins Eaton Analytical Pomona

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-25

Method Summary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA POM
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA POM
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA POM
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA POM

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

Job ID: 380-109897-1
SDG: Weekly PFAS

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
380-109897-1	Halawa Shaft Viewing Pool	Water	08/20/24 09:40	08/22/24 09:53
380-109897-2	FB: Halawa Shaft Viewing Pool	Water	08/20/24 09:40	08/22/24 09:53

Eurofins Eaton Analytical Pomona
941 Corporate Center Drive
Pomona CA 91768-2642
Phone (626) 386 1100

Chain of Custody Record

eurofins

Client Information	Sampler:	Lab PM: Arada Rachelle	Carrier Tracking No(s):	COC No: 380 28005-2757 1
Client Contact: Dr Ron Fenstemacher	Phone: 808-748-5840	E-Mail: Rachelle Arada@et eurofinsus com	State of Origin:	Page: Page 1 of 1
Company: City & County of Honolulu	PWSID:	Analysis Requested		Job #:
Address: 630 South Beretania Street Chemistry Lab	Due Date Requested:			Preservation Codes: R NaThioSO4; RA NaThio/HCl; Q Na2SO3; QA Na2SO3/HCl; Y Trizma; I NH4 Acetate
City: Honolulu	TAT Requested (days):			
State Zip: HI 96843	Compliance Project: Δ Yes Δ No			
Phone: 808-748-5091(Tel)	PO #: C20525101 exp 05312023			
Email: RFENSTEMACHER@hbws org	WO #:			
Project Name: RED-HILL/HBWS Sites Event Desc: RUSH Weekly Red Hill	Project #: 38001111			
Site: Hawaii	SSOW#:			Other:

380-109897 COC

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=wastoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	625 1 625 1_SIM	8015B_GRO_LL (MOD) GRO	8015B_DRO_LL_CS HNL Ranges C10-C24/C24 C36/C8 C18	525 2_PREC (MOD) 525plus Plus TICs	537 1_DW_PREC 537 1 Full List	533 All Analytes	Total Number of containers	Special Instructions/Note
			Preservation Code				R	RA	Q	QA	Y	I		
Halawa Shaft Viewing Pool	8/20/24	0940	G	Water							3	3		
FB Halawa Shaft Viewing Pool	8/20/24	0940		Water							1	1		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I II III IV Other (specify)

Special Instructions/QC Requirements: GR 8/22

Empty Kit Relinquished by	Date	Time	Method of Shipment: FED EX 7781 1104 36 6330
Relinquished by: [redacted]	Date/Time: 8/21/24 1200	Company	Received by: E.PETTNER
Relinquished by:	Date/Time	Company	Received by: Date/Time: 08/22/2024 09:53 Company: EEAP
Relinquished by:	Date/Time	Company	Received by: Date/Time: Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No		Cooler Temperature(s) °C and Other Remarks: 751A 0.5°-0.1°=0.4° GEL-FROZEN

Ver 04 02/2024

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-109897-1
SDG Number: Weekly PFAS

Login Number: 109897
List Number: 1
Creator: Gerfen, Chris

List Source: Eurofins Eaton Analytical Pomona

Question	Answer	Comment
The coolers custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
Samples were received on ice.	True	
Cooler(s) Temperature is acceptable.	True	
Cooler(s) Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and is 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").	N/A	
ClO4 headspace requirement met (>50% for CA, >30% for other states).	N/A	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. Erwin Kawata
City & County of Honolulu
630 South Beretania Street
Public Service Bldg. Room 310
Honolulu, Hawaii 96843

Generated 9/6/2024 10:05:02 AM

JOB DESCRIPTION

RED-HILL
Weekly PFAS

JOB NUMBER

380-110890-1

Eurofins Eaton Analytical Pomona
941 Corporate Center Drive
Pomona CA 91768-2642

See page two for job notes and contact information.

Eurofins Eaton Analytical Pomona

Job Notes

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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

Rachelle Arada

Generated
9/6/2024 10:05:02 AM

Authorized for release by
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Table of Contents

Definitions/Glossary

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Analyte was found in the associated method blank.
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.
¤	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

Job Narrative
380-110890-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 8/29/2024 10:23 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.1°C.

PFAS
Method 533: The following QC issues in preparation batch 380-106493 and analytical batch 380-106567 were observed: 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS) detected greater than 1/3 MRL in Method Blank. Sample Halawa Shaft Viewing Pool (380-110890-1) results are ND for affected analyte. No impact on data.

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

Detection Summary

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool — Lab Sample ID: 380-110890-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	3.7		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		2.0		ng/L	1		533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		2.0		ng/L	1		537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.6		2.0		ng/L	1		537.1	Total/NA

Client Sample ID: FB: Halawa Shaft Viewing Pool — Lab Sample ID: 380-110890-2

No Detections.

This Detection Summary does not include radiochemical test results.

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool

Date Collected: 08/27/24 11:00
Date Received: 08/29/24 10:23

Lab Sample ID: 380-110890-1

Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorohexanesulfonic acid (PFHxS)	**3.7**		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorooctanesulfonic acid (PFOS)	**3.4**		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0	B	2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		09/03/24 06:56	09/04/24 03:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*81*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C6 PFDA	*89*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C5 PFHxA	*84*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C4 PFHpA	*84*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C8 PFOA	*84*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C9 PFNA	*87*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C7 PFUnA	*90*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C2 PFDoA	*95*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C4 PFBA	*93*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C5 PFPeA	*97*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C3 PFBS	*95*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C3 PFHxS	*98*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-110890-1
Matrix: Water
Date Collected: 08/27/24 11:00
Date Received: 08/29/24 10:23

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

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C8 PFOS	*103*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C2-4:2-FTS	*136*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C2-6:2-FTS	*123*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*
13C2-8:2-FTS	*111*		*50 - 200*	*09/03/24 06:56*	*09/04/24 03:54*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorooctanesulfonic acid (PFOS)	**3.4**		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorohexanesulfonic acid (PFHxS)	**3.6**		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 21:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*117*		*70 - 130*	*08/31/24 14:39*	*09/01/24 21:56*	*1*
13C2 PFHxA	*119*		*70 - 130*	*08/31/24 14:39*	*09/01/24 21:56*	*1*
13C2 PFDA	*120*		*70 - 130*	*08/31/24 14:39*	*09/01/24 21:56*	*1*
13C3-GenX	*113*		*70 - 130*	*08/31/24 14:39*	*09/01/24 21:56*	*1*

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-110890-2
Matrix: Water
Date Collected: 08/27/24 11:00
Date Received: 08/29/24 10:23

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Client Sample ID: FB: Halawa Shaft Viewing Pool
Date Collected: 08/27/24 11:00
Date Received: 08/29/24 10:23

Lab Sample ID: 380-110890-2
Matrix: Water

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluorobutanoic acid (PFBA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluoropentanoic acid (PFPeA)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1
Perfluoropentanesulfonic acid (PFPeS)	<2.0		2.0		ng/L		09/04/24 06:29	09/05/24 12:05	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*100*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C6 PFDA	*101*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C5 PFHxA	*109*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C4 PFHpA	*113*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C8 PFOA	*107*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C9 PFNA	*106*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C7 PFUnA	*105*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C2 PFDoA	*102*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C4 PFBA	*105*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C5 PFPeA	*114*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C3 PFBS	*104*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C3 PFHxS	*110*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C8 PFOS	*111*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C2-4:2-FTS	*118*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C2-6:2-FTS	*118*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*
13C2-8:2-FTS	*105*		*50 - 200*	*09/04/24 06:29*	*09/05/24 12:05*	*1*

Client Sample ID: FB: Halawa Shaft Viewing Pool

Date Collected: 08/27/24 11:00
Date Received: 08/29/24 10:23

Lab Sample ID: 380-110890-2

Matrix: Water

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		08/31/24 14:39	09/01/24 22:07	1
Perfluorooctanesulfonic acid (PFOS)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluoroundecanoic acid (PFUnA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorohexanoic acid (PFHxA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorododecanoic acid (PFDoA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorooctanoic acid (PFOA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorodecanoic acid (PFDA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorohexanesulfonic acid (PFHxS)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorobutanesulfonic acid (PFBS)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluoroheptanoic acid (PFHpA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorononanoic acid (PFNA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorotetradecanoic acid (PFTA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
Perfluorotridecanoic acid (PFTrDA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		2.0		ng/L		08/31/24 14:39	09/01/24 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*115*		*70 - 130*	*08/31/24 14:39*	*09/01/24 22:07*	*1*
13C2 PFHxA	*117*		*70 - 130*	*08/31/24 14:39*	*09/01/24 22:07*	*1*
13C2 PFDA	*116*		*70 - 130*	*08/31/24 14:39*	*09/01/24 22:07*	*1*
13C3-GenX	*110*		*70 - 130*	*08/31/24 14:39*	*09/01/24 22:07*	*1*

Action Limit Summary

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool — Lab Sample ID: 380-110890-1

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL Limit	RL	Method	Prep Type
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.7		ng/L	10	2.0	533	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		ng/L	4	2.0	533	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	533	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	3.4		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	3.6		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Client Sample ID: FB: Halawa Shaft Viewing Pool — Lab Sample ID: 380-110890-2

Compliance Check

The results obtained from the analytical testing of this data set were checked against compliance limits received from the client. Any results at or above the compliance limits have been highlighted for your convenience.

Analyte	Result	Qualifier	Unit	EPAMCL Limit	RL	Method	Prep Type
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	533	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	533	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	533	Total/NA
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorooctanoic acid (PFOA)	<2.0		ng/L	4	2.0	537.1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	<2.0		ng/L	10	2.0	537.1	Total/NA
Perfluorononanoic acid (PFNA)	<2.0		ng/L	10	2.0	537.1	Total/NA

Surrogate Summary

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

Job ID: 380-110890-1
SDG: Weekly PFAS

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

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		d5NEFOS	PFHxA	PFDA	GenX
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
380-110371-B-3-A MS	Matrix Spike	107	109	110	105
380-110371-C-3-A MSD	Matrix Spike Duplicate	113	114	111	107
380-110890-1	Halawa Shaft Viewing Pool	117	119	120	113
380-110890-2	FB: Halawa Shaft Viewing Pool	115	117	116	110
LCS 380-106414/22-A	Lab Control Sample	107	112	113	109
MBL 380-106414/20-A	Method Blank	113	118	125	112
MRL 380-106414/21-A	Lab Control Sample	113	109	115	107

Surrogate Legend

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

Isotope Dilution Summary

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

Job ID: 380-110890-1
SDG: Weekly PFAS

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

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		HFPODA	C6PFDA	13C5PHA	C4PFHA	C8PFOA	C9PFNA	13C7PUA	PFDoA
Lab Sample ID	Client Sample ID	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)
380-110660-B-1-A MS	Matrix Spike	85	87	86	89	89	86	91	90
380-110660-C-1-A MSD	Matrix Spike Duplicate	92	86	90	88	84	84	93	88
380-110800-B-1-A MS	Matrix Spike	97	71	93	94	86	79	76	76
380-110800-C-1-A MSD	Matrix Spike Duplicate	105	106	109	109	109	105	103	110
380-110890-1	Halawa Shaft Viewing Pool	81	89	84	84	84	87	90	95
380-110890-2	FB: Halawa Shaft Viewing Pool	100	101	109	113	107	106	105	102
LCS 380-106493/22-A	Lab Control Sample	103	100	105	107	105	103	100	104
LCS 380-106650/22-A	Lab Control Sample	78	88	83	85	85	89	93	95
MBL 380-106493/20-A	Method Blank	89	90	93	96	96	94	89	93
MBL 380-106650/20-A	Method Blank	83	88	87	89	89	89	93	93
MRL 380-106493/21-A	Lab Control Sample	95	101	105	109	107	104	103	104
MRL 380-106650/21-A	Lab Control Sample	74	85	84	85	83	83	86	94

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFBA	PFPeA	C3PFBS	C3PFHS	C8PFOS	42FTS	62FTS	82FTS
Lab Sample ID	Client Sample ID	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)	(50-200)
380-110660-B-1-A MS	Matrix Spike	90	105	99	103	101	114	115	105
380-110660-C-1-A MSD	Matrix Spike Duplicate	89	100	98	99	102	120	119	107
380-110800-B-1-A MS	Matrix Spike	101	109	107	106	109	117	126	112
380-110800-C-1-A MSD	Matrix Spike Duplicate	108	119	108	109	110	117	118	107
380-110890-1	Halawa Shaft Viewing Pool	93	97	95	98	103	136	123	111
380-110890-2	FB: Halawa Shaft Viewing Pool	105	114	104	110	111	118	118	105
LCS 380-106493/22-A	Lab Control Sample	100	111	102	100	101	110	111	108
LCS 380-106650/22-A	Lab Control Sample	89	90	109	109	110	112	113	108
MBL 380-106493/20-A	Method Blank	95	105	98	98	100	110	107	99
MBL 380-106650/20-A	Method Blank	92	93	108	107	109	115	118	105
MRL 380-106493/21-A	Lab Control Sample	102	107	102	105	103	120	114	102
MRL 380-106650/21-A	Lab Control Sample	89	88	110	112	111	114	110	107

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

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

Lab Sample ID: MBL 380-106493/20-A
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 106493

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	1.84	J B	2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.25		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0		ng/L		09/03/24 06:56	09/04/24 00:05	1

Isotope Dilution	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*89*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C6 PFDA	*90*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C5 PFHxA	*93*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C4 PFHpA	*96*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C8 PFOA	*96*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C9 PFNA	*94*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C7 PFUnA	*89*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C2 PFDoA	*93*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C4 PFBA	*95*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C5 PFPeA	*105*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C3 PFBS	*98*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*
13C3 PFHxS	*98*		*50 - 200*	*09/03/24 06:56*	*09/04/24 00:05*	*1*

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

Lab Sample ID: MBL 380-106493/20-A
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 106493

Isotope Dilution	MBL %Recovery	MBL Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOS	100		50 - 200	09/03/24 06:56	09/04/24 00:05	1
13C2-4:2-FTS	110		50 - 200	09/03/24 06:56	09/04/24 00:05	1
13C2-6:2-FTS	107		50 - 200	09/03/24 06:56	09/04/24 00:05	1
13C2-8:2-FTS	99		50 - 200	09/03/24 06:56	09/04/24 00:05	1

Lab Sample ID: LCS 380-106493/22-A
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106493

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	60.1	55.9		ng/L		93	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	60.1	55.0		ng/L		92	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	60.1	57.0		ng/L		95	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	60.1	59.0		ng/L		98	70 - 130
Perfluorobutanesulfonic acid (PFBS)	60.1	57.9		ng/L		96	70 - 130
Perfluorodecanoic acid (PFDA)	60.1	58.2		ng/L		97	70 - 130
Perfluorododecanoic acid (PFDoA)	60.1	59.3		ng/L		99	70 - 130
Perfluoroheptanoic acid (PFHpA)	60.1	57.5		ng/L		96	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	60.1	58.8		ng/L		98	70 - 130
Perfluorohexanoic acid (PFHxA)	60.1	57.6		ng/L		96	70 - 130
Perfluorononanoic acid (PFNA)	60.1	56.8		ng/L		94	70 - 130
Perfluorooctanesulfonic acid (PFOS)	60.1	57.4		ng/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	60.1	58.8		ng/L		98	70 - 130
Perfluoroundecanoic acid (PFUnA)	60.1	59.5		ng/L		99	70 - 130
Perfluorobutanoic acid (PFBA)	60.1	56.9		ng/L		95	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.1	57.7		ng/L		96	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.1	62.0		ng/L		103	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.1	56.5		ng/L		94	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.1	65.7		ng/L		109	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.1	57.0		ng/L		95	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.1	61.9		ng/L		103	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.1	56.3		ng/L		94	70 - 130
Perfluoropentanoic acid (PFPeA)	60.1	57.0		ng/L		95	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.1	57.3		ng/L		95	70 - 130

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

Lab Sample ID: LCS 380-106493/22-A
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106493

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Perfluoropentanesulfonic acid (PFPeS)			60.1	58.1		ng/L		97	70 - 130		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*103*		*50 - 200*
13C6 PFDA	*100*		*50 - 200*
13C5 PFHxA	*105*		*50 - 200*
13C4 PFHpA	*107*		*50 - 200*
13C8 PFOA	*105*		*50 - 200*
13C9 PFNA	*103*		*50 - 200*
13C7 PFUnA	*100*		*50 - 200*
13C2 PFDoA	*104*		*50 - 200*
13C4 PFBA	*100*		*50 - 200*
13C5 PFPeA	*111*		*50 - 200*
13C3 PFBS	*102*		*50 - 200*
13C3 PFHxS	*100*		*50 - 200*
13C8 PFOS	*101*		*50 - 200*
13C2-4:2-FTS	*110*		*50 - 200*
13C2-6:2-FTS	*111*		*50 - 200*
13C2-8:2-FTS	*108*		*50 - 200*

Lab Sample ID: MRL 380-106493/21-A
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106493

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			2.01	1.97	J	ng/L		98	50 - 150		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			2.01	1.86	J	ng/L		92	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			2.01	1.93	J	ng/L		96	50 - 150		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			2.01	1.90	J	ng/L		94	50 - 150		
Perfluorobutanesulfonic acid (PFBS)			2.01	2.04	J	ng/L		101	50 - 150		
Perfluorodecanoic acid (PFDA)			2.01	2.01	J	ng/L		100	50 - 150		
Perfluorododecanoic acid (PFDoA)			2.01	2.02	J	ng/L		101	50 - 150		
Perfluoroheptanoic acid (PFHpA)			2.01	2.03	J	ng/L		101	50 - 150		
Perfluorohexanesulfonic acid (PFHxS)			2.01	2.09	J	ng/L		104	50 - 150		
Perfluorohexanoic acid (PFHxA)			2.01	1.86	J	ng/L		93	50 - 150		
Perfluorononanoic acid (PFNA)			2.01	2.07	J	ng/L		103	50 - 150		
Perfluorooctanesulfonic acid (PFOS)			2.01	2.11	J	ng/L		105	50 - 150		
Perfluorooctanoic acid (PFOA)			2.01	2.20	J	ng/L		110	50 - 150		
Perfluoroundecanoic acid (PFUnA)			2.01	2.05	J	ng/L		102	50 - 150		
Perfluorobutanoic acid (PFBA)			2.01	2.01	J	ng/L		100	50 - 150		

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

Lab Sample ID: MRL 380-106493/21-A
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106493

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.01	2.14	J	ng/L		107	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.01	2.21	J	ng/L		110	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.01	2.15	J	ng/L		107	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.01	2.01	J	ng/L		100	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	2.01	1.87	J	ng/L		93	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.01	2.13	J	ng/L		106	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.01	1.86	J	ng/L		93	50 - 150
Perfluoropentanoic acid (PFPeA)	2.01	2.06	J	ng/L		103	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.01	2.05	J	ng/L		102	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.01	1.94	J	ng/L		96	50 - 150

Isotope Dilution	*MRL %Recovery*	*MRL Qualifier*	*Limits*
13C3 HFPO-DA	*95*		*50 - 200*
13C6 PFDA	*101*		*50 - 200*
13C5 PFHxA	*105*		*50 - 200*
13C4 PFHpA	*109*		*50 - 200*
13C8 PFOA	*107*		*50 - 200*
13C9 PFNA	*104*		*50 - 200*
13C7 PFUnA	*103*		*50 - 200*
13C2 PFDoA	*104*		*50 - 200*
13C4 PFBA	*102*		*50 - 200*
13C5 PFPeA	*107*		*50 - 200*
13C3 PFBS	*102*		*50 - 200*
13C3 PFHxS	*105*		*50 - 200*
13C8 PFOS	*103*		*50 - 200*
13C2-4:2-FTS	*120*		*50 - 200*
13C2-6:2-FTS	*114*		*50 - 200*
13C2-8:2-FTS	*102*		*50 - 200*

Lab Sample ID: 380-110660-B-1-A MS
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 106493

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.1	57.9		ng/L		96	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.1	56.8		ng/L		94	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.1	58.3		ng/L		97	70 - 130

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

Lab Sample ID: 380-110660-B-1-A MS
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 106493

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		60.1	55.5		ng/L		92	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		60.1	61.2		ng/L		100	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		60.1	60.1		ng/L		100	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		60.1	61.5		ng/L		102	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		60.1	61.2		ng/L		102	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		60.1	60.6		ng/L		99	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		60.1	60.8		ng/L		100	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		60.1	58.1		ng/L		97	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		60.1	58.9		ng/L		97	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		60.1	60.7		ng/L		101	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		60.1	62.2		ng/L		104	70 - 130
Perfluorobutanoic acid (PFBA)	<2.0		60.1	60.9		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.1	60.7		ng/L		101	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.1	60.1		ng/L		100	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0	B	60.1	60.5		ng/L		101	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.1	54.0		ng/L		90	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.1	59.0		ng/L		98	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.1	64.7		ng/L		108	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.1	57.9		ng/L		96	70 - 130
Perfluoropentanoic acid (PFPeA)	<2.0		60.1	57.5		ng/L		95	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.1	61.3		ng/L		102	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.1	58.8		ng/L		98	70 - 130

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3 HFPO-DA	*85*		*50 - 200*
13C6 PFDA	*87*		*50 - 200*
13C5 PFHxA	*86*		*50 - 200*
13C4 PFHpA	*89*		*50 - 200*
13C8 PFOA	*89*		*50 - 200*
13C9 PFNA	*86*		*50 - 200*
13C7 PFUnA	*91*		*50 - 200*
13C2 PFDoA	*90*		*50 - 200*
13C4 PFBA	*90*		*50 - 200*
13C5 PFPeA	*105*		*50 - 200*
13C3 PFBS	*99*		*50 - 200*
13C3 PFHxS	*103*		*50 - 200*
13C8 PFOS	*101*		*50 - 200*

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

Lab Sample ID: 380-110660-B-1-A MS
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 106493

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C2-4:2-FTS	114		50 - 200
13C2-6:2-FTS	115		50 - 200
13C2-8:2-FTS	105		50 - 200

Lab Sample ID: 380-110660-C-1-A MSD
Matrix: Water
Analysis Batch: 106567

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 106493

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.5	59.3		ng/L		98	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.5	59.0		ng/L		97	70 - 130	4	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.5	60.4		ng/L		100	70 - 130	4	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		60.5	54.7		ng/L		91	70 - 130	1	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		60.5	64.2		ng/L		104	70 - 130	5	30
Perfluorodecanoic acid (PFDA)	<2.0		60.5	61.5		ng/L		102	70 - 130	2	30
Perfluorododecanoic acid (PFDoA)	<2.0		60.5	65.4		ng/L		108	70 - 130	6	30
Perfluoroheptanoic acid (PFHpA)	<2.0		60.5	62.5		ng/L		103	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		60.5	63.1		ng/L		103	70 - 130	4	30
Perfluorohexanoic acid (PFHxA)	<2.0		60.5	61.8		ng/L		101	70 - 130	2	30
Perfluorononanoic acid (PFNA)	<2.0		60.5	62.3		ng/L		103	70 - 130	7	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		60.5	61.0		ng/L		100	70 - 130	3	30
Perfluorooctanoic acid (PFOA)	<2.0		60.5	63.8		ng/L		105	70 - 130	5	30
Perfluoroundecanoic acid (PFUnA)	<2.0		60.5	59.9		ng/L		99	70 - 130	4	30
Perfluorobutanoic acid (PFBA)	<2.0		60.5	62.9		ng/L		104	70 - 130	3	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.5	61.1		ng/L		101	70 - 130	1	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.5	60.4		ng/L		100	70 - 130	0	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0	B	60.5	59.0		ng/L		98	70 - 130	2	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.5	70.8		ng/L		117	70 - 130	27	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.5	63.4		ng/L		105	70 - 130	7	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.5	63.8		ng/L		105	70 - 130	1	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.5	62.0		ng/L		103	70 - 130	7	30
Perfluoropentanoic acid (PFPeA)	<2.0		60.5	62.4		ng/L		102	70 - 130	8	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.5	61.2		ng/L		101	70 - 130	0	30
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.5	63.7		ng/L		105	70 - 130	8	30

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

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C3 HFPO-DA	92		50 - 200
13C6 PFDA	86		50 - 200
13C5 PFHxA	90		50 - 200
13C4 PFHpA	88		50 - 200
13C8 PFOA	84		50 - 200
13C9 PFNA	84		50 - 200
13C7 PFUnA	93		50 - 200
13C2 PFDoA	88		50 - 200
13C4 PFBA	89		50 - 200
13C5 PFPeA	100		50 - 200
13C3 PFBS	98		50 - 200
13C3 PFHxS	99		50 - 200
13C8 PFOS	102		50 - 200
13C2-4:2-FTS	120		50 - 200
13C2-6:2-FTS	119		50 - 200
13C2-8:2-FTS	107		50 - 200

Lab Sample ID: MBL 380-106650/20-A
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 106650

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<1.0		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluorobutanoic acid (PFBA)	<0.69		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<0.38		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<0.37		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<0.48		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<0.47		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<0.25		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	<0.46		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	<0.15		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1

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

Lab Sample ID: MBL 380-106650/20-A
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 106650

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	<0.38		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluoroheptanesulfonic acid (PFHpS)	<0.36		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1
Perfluoropentanesulfonic acid (PFPeS)	<0.39		2.0		ng/L		09/04/24 06:29	09/05/24 09:23	1

Isotope Dilution	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C3 HFPO-DA	*83*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C6 PFDA	*88*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C5 PFHxA	*87*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C4 PFHpA	*89*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C8 PFOA	*89*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C9 PFNA	*89*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C7 PFUnA	*93*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C2 PFDoA	*93*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C4 PFBA	*92*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C5 PFPeA	*93*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C3 PFBS	*108*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C3 PFHxS	*107*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C8 PFOS	*109*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C2-4:2-FTS	*115*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C2-6:2-FTS	*118*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*
13C2-8:2-FTS	*105*		*50 - 200*	*09/04/24 06:29*	*09/05/24 09:23*	*1*

Lab Sample ID: LCS 380-106650/22-A
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106650

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			60.1	56.6		ng/L		94	70 - 130		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)			60.1	54.0		ng/L		90	70 - 130		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			60.1	55.3		ng/L		92	70 - 130		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			60.1	59.3		ng/L		99	70 - 130		
Perfluorobutanesulfonic acid (PFBS)			60.1	59.5		ng/L		99	70 - 130		
Perfluorodecanoic acid (PFDA)			60.1	57.5		ng/L		96	70 - 130		
Perfluorododecanoic acid (PFDoA)			60.1	60.3		ng/L		100	70 - 130		
Perfluoroheptanoic acid (PFHpA)			60.1	57.1		ng/L		95	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			60.1	56.0		ng/L		93	70 - 130		
Perfluorohexanoic acid (PFHxA)			60.1	56.8		ng/L		95	70 - 130		
Perfluorononanoic acid (PFNA)			60.1	54.5		ng/L		91	70 - 130		
Perfluorooctanesulfonic acid (PFOS)			60.1	56.4		ng/L		94	70 - 130		
Perfluorooctanoic acid (PFOA)			60.1	57.6		ng/L		96	70 - 130		

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

Lab Sample ID: LCS 380-106650/22-A
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106650

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoroundecanoic acid (PFUnA)	60.1	57.5		ng/L		96	70 - 130
Perfluorobutanoic acid (PFBA)	60.1	58.7		ng/L		98	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	60.1	57.2		ng/L		95	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	60.1	58.5		ng/L		97	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	60.1	55.4		ng/L		92	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	60.1	60.1		ng/L		100	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	60.1	55.9		ng/L		93	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	60.1	56.8		ng/L		94	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	60.1	53.4		ng/L		89	70 - 130
Perfluoropentanoic acid (PFPeA)	60.1	56.9		ng/L		95	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	60.1	57.0		ng/L		95	70 - 130
Perfluoropentanesulfonic acid (PFPeS)	60.1	55.1		ng/L		92	70 - 130

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C3 HFPO-DA	*78*		*50 - 200*
13C6 PFDA	*88*		*50 - 200*
13C5 PFHxA	*83*		*50 - 200*
13C4 PFHpA	*85*		*50 - 200*
13C8 PFOA	*85*		*50 - 200*
13C9 PFNA	*89*		*50 - 200*
13C7 PFUnA	*93*		*50 - 200*
13C2 PFDoA	*95*		*50 - 200*
13C4 PFBA	*89*		*50 - 200*
13C5 PFPeA	*90*		*50 - 200*
13C3 PFBS	*109*		*50 - 200*
13C3 PFHxS	*109*		*50 - 200*
13C8 PFOS	*110*		*50 - 200*
13C2-4:2-FTS	*112*		*50 - 200*
13C2-6:2-FTS	*113*		*50 - 200*
13C2-8:2-FTS	*108*		*50 - 200*

Lab Sample ID: MRL 380-106650/21-A
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106650

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	2.00	1.88	J	ng/L		94	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	1.75	J	ng/L		87	50 - 150

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

Lab Sample ID: MRL 380-106650/21-A
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106650

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	2.00	1.91	J	ng/L		95	50 - 150
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.05	J	ng/L		102	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	2.06	J	ng/L		103	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	1.86	J	ng/L		93	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	1.88	J	ng/L		94	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	1.99	J	ng/L		99	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.05	J	ng/L		102	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	1.90	J	ng/L		95	50 - 150
Perfluorononanoic acid (PFNA)	2.00	1.98	J	ng/L		99	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.03	J	ng/L		101	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.21	J	ng/L		111	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.01	J	ng/L		100	50 - 150
Perfluorobutanoic acid (PFBA)	2.00	2.11	J	ng/L		105	50 - 150
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	2.00	2.15	J	ng/L		107	50 - 150
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	2.00	2.05	J	ng/L		102	50 - 150
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	2.00	2.17	J	ng/L		108	50 - 150
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.00	1.82	J	ng/L		91	50 - 150
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	2.00	1.85	J	ng/L		92	50 - 150
Perfluoro-3-methoxypropanoic acid (PFMPA)	2.00	1.85	J	ng/L		92	50 - 150
Perfluoro-4-methoxybutanoic acid (PFMBA)	2.00	1.82	J	ng/L		91	50 - 150
Perfluoropentanoic acid (PFPeA)	2.00	2.03	J	ng/L		101	50 - 150
Perfluoroheptanesulfonic acid (PFHpS)	2.00	1.97	J	ng/L		98	50 - 150
Perfluoropentanesulfonic acid (PFPeS)	2.00	1.89	J	ng/L		94	50 - 150

Isotope Dilution	*MRL %Recovery*	*MRL Qualifier*	*Limits*
13C3 HFPO-DA	*74*		*50 - 200*
13C6 PFDA	*85*		*50 - 200*
13C5 PFHxA	*84*		*50 - 200*
13C4 PFHpA	*85*		*50 - 200*
13C8 PFOA	*83*		*50 - 200*
13C9 PFNA	*83*		*50 - 200*
13C7 PFUnA	*86*		*50 - 200*
13C2 PFDoA	*94*		*50 - 200*
13C4 PFBA	*89*		*50 - 200*
13C5 PFPeA	*88*		*50 - 200*
13C3 PFBS	*110*		*50 - 200*
13C3 PFHxS	*112*		*50 - 200*

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

Lab Sample ID: MRL 380-106650/21-A
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106650

Isotope Dilution	MRL %Recovery	MRL Qualifier	Limits
13C8 PFOS	111		50 - 200
13C2-4:2-FTS	114		50 - 200
13C2-6:2-FTS	110		50 - 200
13C2-8:2-FTS	107		50 - 200

Lab Sample ID: 380-110800-B-1-A MS
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 106650

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.4	55.6		ng/L		92	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.4	53.7		ng/L		89	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.4	57.5		ng/L		95	70 - 130
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		60.4	56.3		ng/L		93	70 - 130
Perfluorobutanesulfonic acid (PFBS)	<2.0		60.4	59.7		ng/L		99	70 - 130
Perfluorodecanoic acid (PFDA)	<2.0		60.4	59.4		ng/L		98	70 - 130
Perfluorododecanoic acid (PFDoA)	<2.0		60.4	62.2		ng/L		103	70 - 130
Perfluoroheptanoic acid (PFHpA)	<2.0		60.4	56.5		ng/L		94	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	<2.0		60.4	59.7		ng/L		99	70 - 130
Perfluorohexanoic acid (PFHxA)	<2.0		60.4	58.7		ng/L		97	70 - 130
Perfluorononanoic acid (PFNA)	<2.0		60.4	57.1		ng/L		95	70 - 130
Perfluorooctanesulfonic acid (PFOS)	<2.0		60.4	56.3		ng/L		93	70 - 130
Perfluorooctanoic acid (PFOA)	<2.0		60.4	61.6		ng/L		102	70 - 130
Perfluoroundecanoic acid (PFUnA)	<2.0		60.4	60.6		ng/L		100	70 - 130
Perfluorobutanoic acid (PFBA)	<2.0		60.4	57.9		ng/L		96	70 - 130
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.4	56.1		ng/L		93	70 - 130
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.4	61.3		ng/L		102	70 - 130
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.4	57.8		ng/L		96	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.4	56.6		ng/L		94	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.4	57.3		ng/L		95	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.4	57.8		ng/L		96	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.4	55.4		ng/L		92	70 - 130
Perfluoropentanoic acid (PFPeA)	<2.0		60.4	57.3		ng/L		95	70 - 130
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.4	58.3		ng/L		97	70 - 130

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

Lab Sample ID: 380-110800-B-1-A MS
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 106650

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.4	59.0		ng/L		98	70 - 130

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C3 HFPO-DA	*97*		*50 - 200*
13C6 PFDA	*71*		*50 - 200*
13C5 PFHxA	*93*		*50 - 200*
13C4 PFHpA	*94*		*50 - 200*
13C8 PFOA	*86*		*50 - 200*
13C9 PFNA	*79*		*50 - 200*
13C7 PFUnA	*76*		*50 - 200*
13C2 PFDoA	*76*		*50 - 200*
13C4 PFBA	*101*		*50 - 200*
13C5 PFPeA	*109*		*50 - 200*
13C3 PFBS	*107*		*50 - 200*
13C3 PFHxS	*106*		*50 - 200*
13C8 PFOS	*109*		*50 - 200*
13C2-4:2-FTS	*117*		*50 - 200*
13C2-6:2-FTS	*126*		*50 - 200*
13C2-8:2-FTS	*112*		*50 - 200*

Lab Sample ID: 380-110800-C-1-A MSD
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 106650

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		60.1	55.3		ng/L		92	70 - 130	1	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		60.1	52.4		ng/L		87	70 - 130	2	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		60.1	57.3		ng/L		95	70 - 130	0	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	<2.0		60.1	55.2		ng/L		92	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		60.1	56.0		ng/L		93	70 - 130	6	30
Perfluorodecanoic acid (PFDA)	<2.0		60.1	55.8		ng/L		93	70 - 130	6	30
Perfluorododecanoic acid (PFDoA)	<2.0		60.1	56.4		ng/L		94	70 - 130	10	30
Perfluoroheptanoic acid (PFHpA)	<2.0		60.1	54.1		ng/L		90	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		60.1	54.9		ng/L		91	70 - 130	8	30
Perfluorohexanoic acid (PFHxA)	<2.0		60.1	56.2		ng/L		94	70 - 130	4	30
Perfluorononanoic acid (PFNA)	<2.0		60.1	56.2		ng/L		93	70 - 130	2	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		60.1	54.1		ng/L		90	70 - 130	4	30
Perfluorooctanoic acid (PFOA)	<2.0		60.1	57.3		ng/L		95	70 - 130	7	30
Perfluoroundecanoic acid (PFUnA)	<2.0		60.1	58.4		ng/L		97	70 - 130	4	30
Perfluorobutanoic acid (PFBA)	<2.0		60.1	56.3		ng/L		94	70 - 130	3	30

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

Lab Sample ID: 380-110800-C-1-A MSD
Matrix: Water
Analysis Batch: 106928

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 106650

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	<2.0		60.1	55.9		ng/L		93	70 - 130	0	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	<2.0		60.1	58.9		ng/L		98	70 - 130	4	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	<2.0		60.1	55.8		ng/L		93	70 - 130	3	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	<2.0		60.1	60.0		ng/L		100	70 - 130	6	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	<2.0		60.1	55.8		ng/L		93	70 - 130	3	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	<2.0		60.1	58.7		ng/L		98	70 - 130	2	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	<2.0		60.1	55.0		ng/L		91	70 - 130	1	30
Perfluoropentanoic acid (PFPeA)	<2.0		60.1	55.3		ng/L		92	70 - 130	4	30
Perfluoroheptanesulfonic acid (PFHpS)	<2.0		60.1	54.8		ng/L		91	70 - 130	6	30
Perfluoropentanesulfonic acid (PFPeS)	<2.0		60.1	56.5		ng/L		94	70 - 130	4	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C3 HFPO-DA	*105*		*50 - 200*
13C6 PFDA	*106*		*50 - 200*
13C5 PFHxA	*109*		*50 - 200*
13C4 PFHpA	*109*		*50 - 200*
13C8 PFOA	*109*		*50 - 200*
13C9 PFNA	*105*		*50 - 200*
13C7 PFUnA	*103*		*50 - 200*
13C2 PFDoA	*110*		*50 - 200*
13C4 PFBA	*108*		*50 - 200*
13C5 PFPeA	*119*		*50 - 200*
13C3 PFBS	*108*		*50 - 200*
13C3 PFHxS	*109*		*50 - 200*
13C8 PFOS	*110*		*50 - 200*
13C2-4:2-FTS	*117*		*50 - 200*
13C2-6:2-FTS	*118*		*50 - 200*
13C2-8:2-FTS	*107*		*50 - 200*

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

Lab Sample ID: MBL 380-106414/20-A
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 106414

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		08/31/24 14:39	09/01/24 19:18	1
Perfluorooctanesulfonic acid (PFOS)	<0.43		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluoroundecanoic acid (PFUnA)	<0.42		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<0.58		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1

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

Lab Sample ID: MBL 380-106414/20-A
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 106414

Analyte	MBL Result	MBL Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<0.42		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorohexanoic acid (PFHxA)	<0.46		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorooctanoic acid (PFOA)	<0.38		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorohexanesulfonic acid (PFHxS)	<0.32		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorobutanesulfonic acid (PFBS)	<0.37		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluoroheptanoic acid (PFHpA)	<0.39		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorononanoic acid (PFNA)	<0.40		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorotetradecanoic acid (PFTA)	<0.54		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
Perfluorotridecanoic acid (PFTrDA)	<0.36		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<0.30		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<0.30		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.60		2.0		ng/L		08/31/24 14:39	09/01/24 19:18	1

Surrogate	*MBL %Recovery*	*MBL Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
d5-NEtFOSAA	*113*		*70 - 130*	*08/31/24 14:39*	*09/01/24 19:18*	*1*
13C2 PFHxA	*118*		*70 - 130*	*08/31/24 14:39*	*09/01/24 19:18*	*1*
13C2 PFDA	*125*		*70 - 130*	*08/31/24 14:39*	*09/01/24 19:18*	*1*
13C3-GenX	*112*		*70 - 130*	*08/31/24 14:39*	*09/01/24 19:18*	*1*

Lab Sample ID: LCS 380-106414/22-A
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106414

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)			25.0	24.1		ng/L		96	70 - 130		
Perfluorooctanesulfonic acid (PFOS)			25.0	25.5		ng/L		102	70 - 130		
Perfluoroundecanoic acid (PFUnA)			25.0	26.2		ng/L		105	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			25.0	24.2		ng/L		97	70 - 130		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			25.0	24.6		ng/L		98	70 - 130		
Perfluorohexanoic acid (PFHxA)			25.0	25.1		ng/L		100	70 - 130		
Perfluorododecanoic acid (PFDoA)			25.0	25.9		ng/L		104	70 - 130		
Perfluorooctanoic acid (PFOA)			25.0	26.3		ng/L		105	70 - 130		
Perfluorodecanoic acid (PFDA)			25.0	26.8		ng/L		107	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			25.0	25.9		ng/L		103	70 - 130		
Perfluorobutanesulfonic acid (PFBS)			25.0	23.5		ng/L		94	70 - 130		
Perfluoroheptanoic acid (PFHpA)			25.0	26.7		ng/L		107	70 - 130		
Perfluorononanoic acid (PFNA)			25.0	26.2		ng/L		105	70 - 130		

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

Lab Sample ID: LCS 380-106414/22-A
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106414

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorotetradecanoic acid (PFTA)	25.0	24.6		ng/L		98	70 - 130
Perfluorotridecanoic acid (PFTrDA)	25.0	25.8		ng/L		103	70 - 130
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	25.0	25.9		ng/L		104	70 - 130
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	25.0	24.8		ng/L		99	70 - 130
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	25.0	26.0		ng/L		104	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
d5-NEtFOSAA	*107*		*70 - 130*
13C2 PFHxA	*112*		*70 - 130*
13C2 PFDA	*113*		*70 - 130*
13C3-GenX	*109*		*70 - 130*

Lab Sample ID: MRL 380-106414/21-A
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106414

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	2.00	2.06	J	ng/L		103	50 - 150
Perfluorooctanesulfonic acid (PFOS)	2.00	2.04	J	ng/L		102	50 - 150
Perfluoroundecanoic acid (PFUnA)	2.00	2.14	J	ng/L		107	50 - 150
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.02	J	ng/L		101	50 - 150
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.24	J	ng/L		112	50 - 150
Perfluorohexanoic acid (PFHxA)	2.00	2.24	J	ng/L		112	50 - 150
Perfluorododecanoic acid (PFDoA)	2.00	2.19	J	ng/L		110	50 - 150
Perfluorooctanoic acid (PFOA)	2.00	2.21	J	ng/L		111	50 - 150
Perfluorodecanoic acid (PFDA)	2.00	2.17	J	ng/L		109	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	2.00	2.17	J	ng/L		109	50 - 150
Perfluorobutanesulfonic acid (PFBS)	2.00	2.08	J	ng/L		104	50 - 150
Perfluoroheptanoic acid (PFHpA)	2.00	2.29	J	ng/L		115	50 - 150
Perfluorononanoic acid (PFNA)	2.00	2.20	J	ng/L		110	50 - 150
Perfluorotetradecanoic acid (PFTA)	2.00	2.19	J	ng/L		110	50 - 150
Perfluorotridecanoic acid (PFTrDA)	2.00	2.13	J	ng/L		107	50 - 150
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	2.00	2.07	J	ng/L		104	50 - 150

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

Lab Sample ID: MRL 380-106414/21-A
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 106414

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)			2.00	2.00	J	ng/L		100	50 - 150		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)			2.00	2.15	J	ng/L		108	50 - 150		

Surrogate	*MRL %Recovery*	*MRL Qualifier*	*Limits*
d5-NEtFOSAA	*113*		*70 - 130*
13C2 PFHxA	*109*		*70 - 130*
13C2 PFDA	*115*		*70 - 130*
13C3-GenX	*107*		*70 - 130*

Lab Sample ID: 380-110371-B-3-A MS
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 106414

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	46.2		ng/L		92	70 - 130		
Perfluorooctanesulfonic acid (PFOS)	<2.0		50.1	49.1		ng/L		98	70 - 130		
Perfluoroundecanoic acid (PFUnA)	<2.0		50.1	48.3		ng/L		96	70 - 130		
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		50.1	46.9		ng/L		94	70 - 130		
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		50.1	48.2		ng/L		96	70 - 130		
Perfluorohexanoic acid (PFHxA)	<2.0		50.1	49.1		ng/L		98	70 - 130		
Perfluorododecanoic acid (PFDoA)	<2.0		50.1	47.9		ng/L		96	70 - 130		
Perfluorooctanoic acid (PFOA)	<2.0		50.1	53.1		ng/L		106	70 - 130		
Perfluorodecanoic acid (PFDA)	<2.0		50.1	47.1		ng/L		94	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)	<2.0		50.1	50.2		ng/L		100	70 - 130		
Perfluorobutanesulfonic acid (PFBS)	<2.0		50.1	47.9		ng/L		96	70 - 130		
Perfluoroheptanoic acid (PFHpA)	2 0		50 1	52 5		ng/L		105	70 - 130		
Perfluorononanoic acid (PFNA)	<2.0		50.1	51.0		ng/L		102	70 - 130		
Perfluorotetradecanoic acid (PFTA)	<2.0		50.1	46.4		ng/L		93	70 - 130		
Perfluorotridecanoic acid (PFTrDA)	<2.0		50.1	48.1		ng/L		96	70 - 130		
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		50.1	49.7		ng/L		99	70 - 130		
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		50.1	47.3		ng/L		94	70 - 130		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		50.1	49.0		ng/L		98	70 - 130		

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

Lab Sample ID: 380-110371-B-3-A MS
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 106414

Surrogate	MS %Recovery	MS Qualifier	Limits
d5-NEtFOSAA	107		70 - 130
13C2 PFHxA	109		70 - 130
13C2 PFDA	110		70 - 130
13C3-GenX	105		70 - 130

Lab Sample ID: 380-110371-C-3-A MSD
Matrix: Water
Analysis Batch: 106442

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 106414

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		49.9	48.4		ng/L		97	70 - 130	5	30
Perfluorooctanesulfonic acid (PFOS)	<2.0		49.9	48.9		ng/L		98	70 - 130	0	30
Perfluoroundecanoic acid (PFUnA)	<2.0		49.9	48.3		ng/L		97	70 - 130	0	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		49.9	47.9		ng/L		96	70 - 130	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		49.9	50.0		ng/L		100	70 - 130	4	30
Perfluorohexanoic acid (PFHxA)	<2.0		49.9	52.5		ng/L		105	70 - 130	7	30
Perfluorododecanoic acid (PFDoA)	<2.0		49.9	49.0		ng/L		98	70 - 130	2	30
Perfluorooctanoic acid (PFOA)	<2.0		49.9	54.0		ng/L		108	70 - 130	2	30
Perfluorodecanoic acid (PFDA)	<2.0		49.9	49.1		ng/L		98	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	<2.0		49.9	49.2		ng/L		99	70 - 130	2	30
Perfluorobutanesulfonic acid (PFBS)	<2.0		49.9	47.7		ng/L		96	70 - 130	0	30
Perfluoroheptanoic acid (PFHpA)	<2.0		49.9	53.8		ng/L		108	70 - 130	2	30
Perfluorononanoic acid (PFNA)	<2.0		49.9	49.0		ng/L		98	70 - 130	4	30
Perfluorotetradecanoic acid (PFTA)	<2.0		49.9	47.2		ng/L		95	70 - 130	2	30
Perfluorotridecanoic acid (PFTrDA)	<2.0		49.9	47.0		ng/L		94	70 - 130	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid(9Cl-PF3ONS)	<2.0		49.9	47.7		ng/L		96	70 - 130	4	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	<2.0		49.9	47.0		ng/L		94	70 - 130	1	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<2.0		49.9	48.7		ng/L		98	70 - 130	0	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
d5-NEtFOSAA	113		70 - 130
13C2 PFHxA	114		70 - 130
13C2 PFDA	111		70 - 130
13C3-GenX	107		70 - 130

LCMS

Prep Batch: 106414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-110890-1	Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
380-110890-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	537.1 DW	
MBL 380-106414/20-A	Method Blank	Total/NA	Water	537.1 DW	
LCS 380-106414/22-A	Lab Control Sample	Total/NA	Water	537.1 DW	
MRL 380-106414/21-A	Lab Control Sample	Total/NA	Water	537.1 DW	
380-110371-B-3-A MS	Matrix Spike	Total/NA	Water	537.1 DW	
380-110371-C-3-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1 DW	

Analysis Batch: 106442

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-110890-1	Halawa Shaft Viewing Pool	Total/NA	Water	537.1	106414
380-110890-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	537.1	106414
MBL 380-106414/20-A	Method Blank	Total/NA	Water	537.1	106414
LCS 380-106414/22-A	Lab Control Sample	Total/NA	Water	537.1	106414
MRL 380-106414/21-A	Lab Control Sample	Total/NA	Water	537.1	106414
380-110371-B-3-A MS	Matrix Spike	Total/NA	Water	537.1	106414
380-110371-C-3-A MSD	Matrix Spike Duplicate	Total/NA	Water	537.1	106414

Prep Batch: 106493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-110890-1	Halawa Shaft Viewing Pool	Total/NA	Water	533	
MBL 380-106493/20-A	Method Blank	Total/NA	Water	533	
LCS 380-106493/22-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-106493/21-A	Lab Control Sample	Total/NA	Water	533	
380-110660-B-1-A MS	Matrix Spike	Total/NA	Water	533	
380-110660-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	

Analysis Batch: 106567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-110890-1	Halawa Shaft Viewing Pool	Total/NA	Water	533	106493
MBL 380-106493/20-A	Method Blank	Total/NA	Water	533	106493
LCS 380-106493/22-A	Lab Control Sample	Total/NA	Water	533	106493
MRL 380-106493/21-A	Lab Control Sample	Total/NA	Water	533	106493
380-110660-B-1-A MS	Matrix Spike	Total/NA	Water	533	106493
380-110660-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	106493

Prep Batch: 106650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-110890-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	533	
MBL 380-106650/20-A	Method Blank	Total/NA	Water	533	
LCS 380-106650/22-A	Lab Control Sample	Total/NA	Water	533	
MRL 380-106650/21-A	Lab Control Sample	Total/NA	Water	533	
380-110800-B-1-A MS	Matrix Spike	Total/NA	Water	533	
380-110800-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	

Analysis Batch: 106928

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-110890-2	FB: Halawa Shaft Viewing Pool	Total/NA	Water	533	106650
MBL 380-106650/20-A	Method Blank	Total/NA	Water	533	106650
LCS 380-106650/22-A	Lab Control Sample	Total/NA	Water	533	106650
MRL 380-106650/21-A	Lab Control Sample	Total/NA	Water	533	106650

LCMS (Continued)

Analysis Batch: 106928 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
380-110800-B-1-A MS	Matrix Spike	Total/NA	Water	533	106650
380-110800-C-1-A MSD	Matrix Spike Duplicate	Total/NA	Water	533	106650

Lab Chronicle

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Client Sample ID: Halawa Shaft Viewing Pool

Lab Sample ID: 380-110890-1

Date Collected: 08/27/24 11:00
Matrix: Water
Date Received: 08/29/24 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			106493	XTD8	EA POM	09/03/24 06:56
Total/NA	Analysis	533		1	106567	SZ9R	EA POM	09/04/24 03:54
Total/NA	Prep	537.1 DW			106414	N8NE	EA POM	08/31/24 14:39
Total/NA	Analysis	537.1		1	106442	SZ9R	EA POM	09/01/24 21:56

Client Sample ID: FB: Halawa Shaft Viewing Pool

Lab Sample ID: 380-110890-2

Date Collected: 08/27/24 11:00
Matrix: Water
Date Received: 08/29/24 10:23

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	533			106650	XTD8	EA POM	09/04/24 06:29
Total/NA	Analysis	533		1	106928	SZ9R	EA POM	09/05/24 12:05
Total/NA	Prep	537.1 DW			106414	N8NE	EA POM	08/31/24 14:39
Total/NA	Analysis	537.1		1	106442	SZ9R	EA POM	09/01/24 22:07

Laboratory References:

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

Accreditation/Certification Summary

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Laboratory: Eurofins Eaton Analytical Pomona

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Hawaii	State	CA00006	01-31-25

Method Summary

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Method	Method Description	Protocol	Laboratory
533	Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water	EPA	EA POM
537.1	Perfluorinated Alkyl Acids (LC/MS)	EPA	EA POM
533	Extraction of Perfluorinated and Polyfluorinated Alkyl Acids	EPA	EA POM
537.1 DW	Extraction of Perfluorinated Alkyl Acids	EPA	EA POM

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

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

Job ID: 380-110890-1
SDG: Weekly PFAS

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
380-110890-1	Halawa Shaft Viewing Pool	Water	08/27/24 11:00	08/29/24 10:23
380-110890-2	FB: Halawa Shaft Viewing Pool	Water	08/27/24 11:00	08/29/24 10:23

Eurofins Eaton Analytical Pomona
941 Corporate Center Drive
Pomona, CA 91768-2642
Phone (626) 386-1100

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Olaf Hoppe	Lab PM: Arada Rachelle	Carrier Tracking No(s):	COC No: 380-28005-2757 1
Client Contact: Dr Ron Fenstemacher	Phone: 808-748-5840	E-Mail: Rachelle.Arada@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: City & County of Honolulu	PWSID:			Job #:

Address: 630 South Beretania Street Chemistry Lab	Due Date Requested	Analysis Requested
City: Honolulu	TAT Requested (days):	
State, Zip: HI 96843	Compliance Project: Δ Yes Δ No	
Phone: 808-748-5091(Tel)	PO #: C20525101 exp 05312023	
Email: RFENSTEMACHER@hbws.org	WO #:	
Project Name: RED-HILL/HBWS Sites Event Desc: RUSH Weekly Red Hill	Project #: 38001111	
Site: Hawaii	SSOW#:	

380-110890 COC

Preservation Codes
R - NaThioSO4
RA - NaThio/HCl
Q Na2SO3
QA - Na2SO3/HCl
Y - Trizma
I - NH4 Acetate
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	625.1, 625.1_SIM	8015B_GRO_LL - (MOD) GRO	8015B_DRO_LL_CS - HNL Ranges C10-C24/C24-C36/C8-C18	525.2_PREC (MOD) 525plus Plus TICs	537 1_DW_PREC - 537 1 Full List	533 - All Analytes	Total Number of containers	Special Instructions/Note:
			Preservation Code:				R	RA	Q	QA	Y	I		
Halawa Shaft Viewing Pool	8/27/24	1100		Water							3	3		
FB Halawa Shaft Viewing Pool	8/27/24	1100		Water							1	1		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested I, II, III, IV, Other (specify)

Special Instructions/QC Requirements.

Empty Kit Relinquished by: | Date | Time: | Method of Shipment: FEDEX 7782 4639 2790

Relinquished by: [redacted]	Date/Time: 8/27/24 1230	Company	Received by: G.REITNER	Date/Time: 08/29/2024 10:23	Company: EEAP
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks: 751A 2.2°-0.1°=2.1° GEL FROZEN

Ver 04/02/2024

Login Sample Receipt Checklist

Client: City & County of Honolulu

Job Number: 380-110890-1
SDG Number: Weekly PFAS

Login Number: 110890
List Number: 1
Creator: Gerfen, Chris

List Source: Eurofins Eaton Analytical Pomona

Question	Answer	Comment
The coolers custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
Samples were received on ice.	True	
Cooler(s) Temperature is acceptable.	True	
Cooler(s) Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and is 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").	N/A	
ClO4 headspace requirement met (>50% for CA, >30% for other states).	N/A	
Samples do not require splitting or compositing.	True	
Container provided by EEA	True	