Per- and Polyfluoroalkyl Substances (PFAS) Data Summary No. 4

Red Hill Bulk Fuel Storage Facility
Joint Base Pearl Harbor-Hickam, Oahu, Hawaii

INTRODUCTION

The Navy has initiated a **Remedial Investigation (RI)** at the Red Hill Bulk Fuel Storage Facility (referred to as the Facility) as a result of the 2022 **Aqueous Film-Forming Foam (AFFF)** accidental release. To expedite data collection activities, the Navy is conducting initial quarterly groundwater sampling ahead of the fully developed RI sampling work plan being prepared in coordination with the **State of Hawaii Department of Health (DOH)** and **U.S. Environmental Protection Agency (EPA)**.

REMEDIAL INVESTIGATION

The RI focuses on two areas (Area A and Area B) within the Facility (*Figure 1*). Area A includes the area near the November 2022 AFFF accidental release area. Area B includes the western portion of the Facility where **per- and polyfluoroalkyl substances (PFAS)** were detected in groundwater monitoring wells during a September 2023 baseline groundwater sampling event. There have been no documented releases in Area B.

FIELD ACTIVITIES

The fourth quarterly groundwater sampling and testing event took place from July through September 2025. Groundwater samples were collected from 43 monitoring wells (*Figure 1*). These samples are called the **Quarter 4 (Q4)** samples.

Shallow and deep groundwater occur beneath the site. Shallow groundwater is located approximately 30–60 feet deep and is not used for drinking water. Deep groundwater at the site is located approximately 100–600 feet deep and comprises the aquifer, which can serve as a source of drinking water. Below the shallow groundwater is a layer of soil and rock that limits the downward flow of the shallow groundwater to the deep groundwater. Of the 43 groundwater monitoring wells sampled, 33 are in deep groundwater and 10 are in shallow groundwater. Two new deep groundwater monitoring wells were installed and sampled in Area A during Q4.

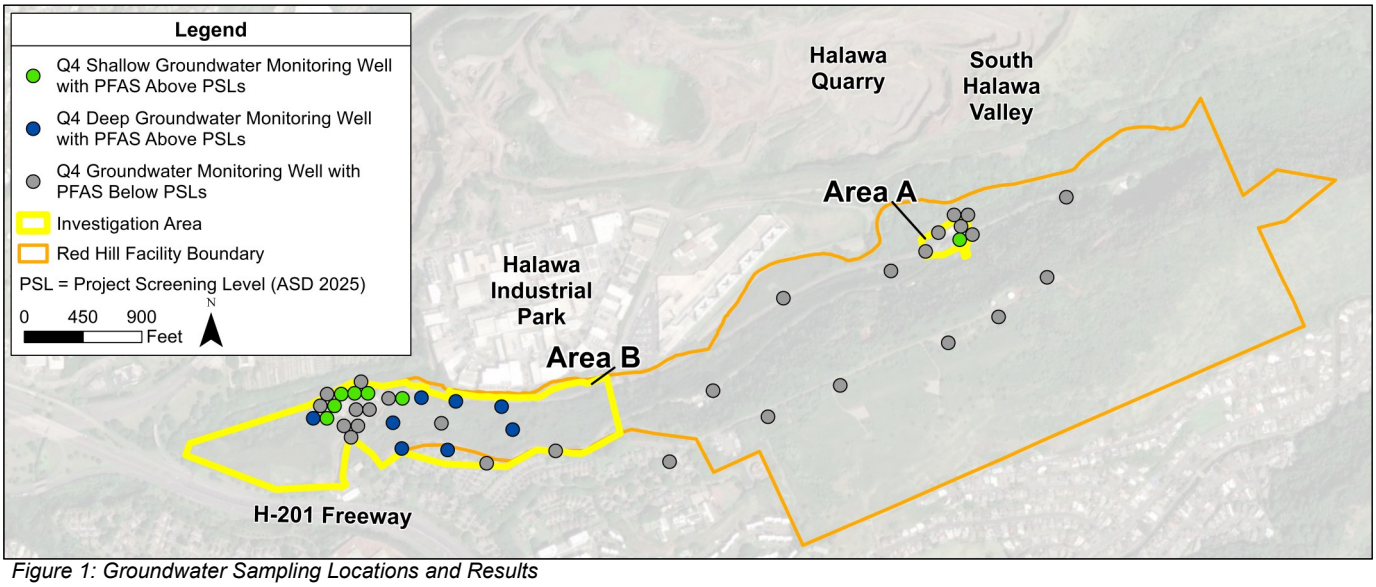

Figure 1: Groundwater Sampling Locations and Results

PFAS are a family of thousands of different chemicals which have been widely used in many household and industrial products since the 1950s. The Navy and Department of Defense have developed proactive policies to address past releases of PFAS, including perfluorooctanoic acid (PFOA) and per-fluorooctanesulfonic acid (PFOS), at installations nationwide.

The groundwater samples were analyzed for PFAS by an accredited analytical laboratory utilizing EPA Method 1633, the standard method for PFAS testing in groundwater (*ASD 2024*).

For the Q4 groundwater sampling event, the method tested for 50 different PFAS. At the time of the Q4 sampling event, project-specific screening levels had been established for 11 of the 50 PFAS analyzed for.

If PFAS are detected at concentrations above the associated project screening level, that means additional investigation is likely needed. These project screening levels may change over time as more information is learned about these compounds (*ASD 2025*).

RESULTS

Q4 results were as follows:

Area A:

- One shallow groundwater monitoring well in Area A had concentrations of some PFAS above the project screening levels (*Figure 1*).

Area B:

- Eight of the 20 deep groundwater monitoring wells in Area B had concentrations of some PFAS above the project screening levels (*Figure 1*).
- Six shallow groundwater monitoring wells in Area B had concentrations of some PFAS above the project screening levels (*Figure 1*). The highest concentrations of PFAS at Area B were observed in the shallow groundwater wells.
- **Perfluorooctanoic acid (PFOA)** and **perfluorooctanesulfonic acid (PFOS)** were the two most frequently detected PFAS at concentrations above the project screening levels at Area B.
- The Red Hill Shaft water pumping station did not have any PFAS concentrations above the project screening levels.

Table 1: Summary of Laboratory Analyses of PFAS

PFAS	Project Screening Level (ppt)	Minimum–Maximum Concentrations (ppt)
Deep Groundwater		
Perfluorooctanoic acid (PFOA)	4	Not Detected—7.7
Perfluorooctanesulfonic acid (PFOS)	4	Not Detected—14
Shallow Groundwater		
Perfluorooctanoic acid (PFOA)	4	Not Detected—58
Perfluorooctanesulfonic acid (PFOS)	4	Not Detected—610
Perfluorohexanesulfonic acid (PFHxS)	10	0.071—480
Perfluorobutanoic acid (PFBA)	1,800	Not Detected—2,400
Perfluorohexanoic acid (PFHxA)	990	Not Detected—6,800
Perfluorononanoic acid (PFNA)	5.9	Not Detected—7.5
Perfluoropropanoic acid (PFPrA)	980	Not Detected—1,100

Notes:
Units are in parts per trillion (ppt).
Q4 project screening levels are consistent with *ASD 2025*. Project screening levels may change over time as more information becomes available.

Table 1 presents the range of concentrations for the PFAS detected above project screening levels in one or more groundwater monitoring wells.

REFERENCES

Assistant Secretary of Defense (ASD). 2024. *Establishing a Consistent Methodology for the Analysis of Per- and Polyfluoroalkyl Substances in Matrices Other than Drinking Water*. Washington, DC: Assistant Secretary of Defense. May 1.

ASD. 2025. *Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program.* Washington, DC: Office of the Assistant

HEALTH INFORMATION

Federal agencies such as the Agency for Toxic Substances and Disease Registry (ATSDR) and the EPA continue to conduct and support research into the health effects associated with PFAS exposure. More information about health effects can be found online at:

ATSDR: https://www.atsdr.cdc.gov/pfas/index.html

EPA: https://www.epa.gov/pfas

Final PFAS National Primary Drinking Water Regulation: https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas

FOR MORE INFORMATION/COMMENTS

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Summary of the PFAS Remedial Investigation's Fourth Quarter Groundwater Monitoring
Data Table - Groundwater Results Round IV - RI PFAS Release, RHBFSF, JBPHH Oahu HI

			Location	OWDFMW01		OWDFMW02A		OWDFMW03A		OWDFMW03B		OWDFMW04A		OWDFMW05A		OWDFMW05A		OWDFMW05B		OWDFMW06A		OWDFMW06B		OWDFMW07A		OWDFMW07B		OWDFMW07C		OWDFMW08A	
			COC ID	JV224		JV225		JV239		JV234		JV240		JV241		JV242		JV250		JV246		JV247		JV248		JV249		JV251		JV245	
			Matrix	WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG	
			Sample Type	N		N		N		N		N		N		FD		N		N		N		N		N		N		N	
			Sample Date	7/28/2025		7/28/2025		7/22/2025		7/28/2025		7/29/2025		7/30/2025		7/30/2025		8/1/2025		7/30/2025		8/1/2025		7/30/2025		7/29/2025		7/30/2025		7/22/2025	
Chemical	Abbr.	Cas No.	PSL[a,b]	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Perfluoropropanoic Acid	PFPrA	422-64-0	980	**7.9**		**1.2**	J	**4.6**		**1100**		**9.3**		**51**		**52**			R	**2.8**		**38**		**0.67**	J	**28**		**6.3**		**2**	
Perfluorobutanoic Acid	PFBA	375-22-4	1800	**4.6**		**0.97**		**6.7**		**2200**		**9.7**		**93**		**92**		**2400**		**2.3**		**41**		0.71	U	**32**		**3.3**		**1.7**	
Perfluoropentanoic Acid	PFPeA	2706-90-3	—	**5.3**		**0.65**	J+	**17**		**7500**		**16**		**240**		**240**		**4100**		**3.9**		**68**		**1.1**	J+	**32**		**1.6**	J+	**0.61**	J+
Perfluorohexanoic Acid	PFHxA	307-24-4	990	**2.7**		0.78	U	**10**		**6800**		**11**		**190**		**200**		**4500**		**2.3**		**37**		0.77	U	**22**		**0.35**	J	**0.24**	J
Perfluoroheptanoic Acid	PFHpA	375-85-9	—	**2.7**		0.78	U	**4.8**		**1900**		**14**		**53**		**55**		**1100**		**1.1**	J	**27**		0.77	U	**17**		**0.35**	J	**0.29**	J
Perfluorooctanoic Acid	PFOA	335-67-1	4	**1.5**		0.27	U	**0.27**	J	**30**		**7.7**		**2**		**1.9**		**21**		**0.27**	J	**19**		0.26	U	**23**		**2.5**		**0.31**	J
Perfluorononanoic Acid	PFNA	375-95-1	5.9	**0.21**	J	0.18	U	**0.14**	J	**1.3**		**2.6**		**0.83**		**0.91**		**1.5**		0.19	U	**7.5**		0.18	U	**7.2**		**0.86**		**0.12**	J
Perfluorodecanoic Acid	PFDA	335-76-2	0.52	0.18	U	0.18	U	0.19	U	0.18	U	**0.17**	J	**0.13**	J	**0.11**	J	0.2	U	0.19	U	**0.21**	J	0.18	U	**0.45**		0.17	U	0.18	U
Perfluoroundecanoic Acid	PFUnA	2058-94-8	—	0.27	U	0.27	U	0.28	U	0.27	U	0.29	U	0.28	U	0.27	U	0.29	U	0.28	U	0.31	U	0.26	U	**1.1**		0.26	U	0.27	U
Perfluorododecanoic Acid	PFDoA	307-55-1	—	0.18	U	0.18	U	0.19	U	0.18	U	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
Perfluorotridecanoic Acid	PFTrDA	72629-94-8	—	0.27	U	0.27	U	0.28	U	0.27	U	0.29	U	0.28	U	0.27	U	0.29	U	0.28	U	0.31	U	0.26	U	0.29	U	0.26	U	0.27	U
Perfluorotetradecanoic Acid	PFTA	376-06-7	—	0.27	U	0.27	U	0.28	U	0.27	U	0.29	U	0.28	U	0.27	U	0.29	U	0.28	U	0.31	U	0.26	U	0.29	U	0.26	U	0.27	U
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5	—	0.27	U	0.27	U	0.28	U	0.27	U	0.29	U	0.28	U	0.27	U	0.29	U	0.28	U	0.31	U	0.26	U	0.29	U	0.26	U	0.27	U
Perfluorooctadecanoic Acid	PFODA	16517-11-6	—	0.27	UJ	0.27	UJ	0.28	U	0.27	UJ	0.29	UJ	0.28	UJ	0.27	UJ	0.29	UJ	0.28	UJ	0.31	UJ	0.26	UJ	0.29	UJ	0.26	UJ	0.27	U
Perfluorobutanesulfonic Acid	PFBS	375-73-5	600	**0.45**		0.18	U	**0.21**	J	**13**		**2.8**		**1.4**		**1.4**		**10**		**0.42**		**15**		0.18	U	**17**		**2.2**		**0.14**	J
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4	—	**0.074**	J	0.18	U	0.19	U	**7.2**		**0.29**	J	**0.62**		**0.51**		**5.4**		**0.28**	J	**1.3**		0.18	U	**1.2**		**0.74**		**0.11**	J
Perfluorohexanesulfonic Acid	PFHxS	355-46-4	10	**0.65**		**0.13**	J	**0.27**	J	**48**		**3.3**		**4.2**		**4.3**		**40**		**2**		**18**		0.18	U	**18**		**10**		**0.84**	
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8	—	0.18	U	0.18	U	0.19	U	**1.8**		**0.11**	J	**0.12**	J	**0.13**	J	**0.92**		0.19	U	**0.45**		0.18	U	**0.36**	J	**0.16**	J	0.18	U
Perfluorooctanesulfonic Acid	PFOS	1763-23-1	4	**0.49**		0.18	U	**0.25**	J+	**57**		**6.5**		**4**		**4.1**		**21**		**1.6**		**32**		0.18	U	**20**		**5.2**		**0.44**	
Perfluoro-1-nonanesulfonic Acid	PFNS	68259-12-1	—	0.18	U	0.18	U	0.19	U	0.18	U	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
Perfluorodecanesulfonic Acid	PFDS	335-77-3	—	0.27	U	0.27	U	0.28	U	0.27	U	0.29	U	0.28	U	0.27	U	0.29	U	0.28	U	0.31	U	0.26	U	0.29	U	0.26	U	0.27	U
Perfluorododecanesulfonic Acid	PFDoS	79780-39-5	—	0.18	U	0.18	U	0.19	U	0.18	U	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
1H,1H,2H,2H-Perfluorohexane Sulfonic Acid	4:2 FTS	757124-72-4	—	0.73	U	0.72	U	0.75	U	**4.2**		0.78	U	0.75	U	**0.28**	J	**30**		0.75	U	0.82	U	0.71	U	0.77	U	0.7	U	0.72	U
1H,1H, 2H, 2H-Perfluorooctane Sulfonic Acid	6:2 FTS	27619-97-2	—	3.1	U	3.1	U	0.75	U	**9200**		3.1	U	**350**		**360**		**43000**		**3.1**	J	**0.72**	J	3.1	U	**1.3**	J	3.1	U	0.72	U
1H,1H, 2H, 2H-Perfluorodecane Sulfonic Acid	8:2 FTS	39108-34-4	—	0.73	U	0.72	U	0.75	U	0.18	U	0.78	U	0.75	U	0.71	U	**0.18**	J	0.75	U	0.82	U	0.71	U	0.77	U	0.7	U	0.72	U
1H,1H,2H,2H-perfluorododecane Sulfonic Acid	10:2 FTS	120226-60-0	—	0.73	U	0.72	U	0.75	U	0.71	U	0.78	U	0.75	U	0.71	U	0.79	U	0.75	U	0.82	U	0.71	U	0.77	U	0.7	U	0.72	U
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8	—	0.73	U	0.72	U	0.75	U	0.71	U	0.78	U	0.75	U	0.71	U	0.79	U	0.75	U	0.82	U	0.71	U	0.77	U	0.7	U	0.72	U
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2	—	0.73	U	0.72	U	0.75	U	0.71	U	0.78	U	0.75	U	0.71	U	0.79	U	0.75	U	0.82	U	0.71	U	0.77	U	0.7	U	0.72	U
Perfluorobutane Sulfonamide	PFBSA	30334-69-1	—	0.18	U	0.18	U	0.19	U	**0.2**	J	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	**0.63**		0.18	U	**0.28**	J	0.17	U	0.18	U
Perfluorohexane Sulfonamide	PFHxSA	41997-13-1	—	0.18	U	0.18	U	0.19	U	0.18	U	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
Perfluorooctane Sulfonamide	PFOSA	754-91-6	—	0.18	U	0.18	U	0.19	U	0.18	U	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
N-Methyl Perfluorooctane Sulfonamidoacetic Acid	NMeFOSAA	2355-31-9	—	0.18	U	0.18	U	0.19	U	0.18	U	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
N-Ethyl Perfluorooctane Sufonamidoacetic Acid	NEtFOSAA	2991-50-6	—	0.18	U	0.18	U	0.19	U	0.18	U	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
N-Methyl Perfluorooctane Sulfonamidoethanol	NMeFOSE	24448-09-7	—	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U	1.1	U	1.2	U	1	U	1.1	U
N-Ethyl Perfluorooctane Sulfonamidoethanol	NEtFOSE	1691-99-2	—	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U	1.2	U	1.1	U	1.2	U	1.1	U	1.2	U	1	U	1.1	U
Hexafluoropropylene oxide dimer Acid	HFPO-DA	13252-13-6	1.5	0.36	U	0.36	U	0.38	U	0.35	U	0.39	U	0.38	U	0.36	U	0.39	U	0.38	U	0.41	U	0.35	U	0.39	U	0.35	U	0.36	U
4,8-dioxa-3H-perfluorononanoic Acid	ADONA	919005-14-4	—	0.36	U	0.36	U	0.38	U	0.35	U	0.39	U	0.38	U	0.36	U	0.39	U	0.38	U	0.41	U	0.35	U	0.39	U	0.35	U	0.36	U
9-chlorohexadecafluoro-3-oxanone-1-sulfonic Acid	9Cl-PF3ONS	756426-58-1	—	0.36	U	0.36	U	0.38	U	0.35	U	0.39	U	0.38	U	0.36	U	0.39	U	0.38	U	0.41	U	0.35	U	0.39	U	0.35	U	0.36	U
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic Acid	11Cl-PF3OUdS	763051-92-9	—	0.36	U	0.36	U	0.38	U	0.35	U	0.39	U	0.38	U	0.36	U	0.39	U	0.38	U	0.41	U	0.35	U	0.39	U	0.35	U	0.36	U
3:3 Fluorotelomer Carboxylic Acid	3:3 FTCA	356-02-5	—	0.73	U	0.72	U	0.75	U	**21**		0.78	U	**1.3**	J	**1.4**	J	0.79	U	0.75	U	0.82	U	0.71	U	0.77	U	0.7	U	0.72	U
5:3 Fluorotelomer Carboxylic Acid	5:3 FTCA	914637-49-3	—	0.73	U	0.72	U	0.75	U	**46**		0.78	U	**3.1**		**3.5**		**2.2**		0.75	U	0.82	U	0.71	U	0.77	U	0.7	U	0.72	U
7:3 Fluorotelomer Carboxylic Acid	7:3 FTCA	812-70-4	—	0.73	U	0.72	U	0.75	U	0.71	U	0.78	U	0.75	U	0.71	U	0.79	U	0.75	U	0.82	U	0.71	U	0.77	U	0.7	U	0.72	U
2H-Perfluoro-2-octenoic Acid	6:2 FTUCA	70887-88-6	—	0.18	U	0.18	U	0.19	U	**18**		0.2	U	**0.17**	J	**0.21**	J	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
2H-Perfluoro-2-decenoic Acid	8:2 FTUCA	70887-84-2	—	0.18	U	0.18	U	0.19	U	0.18	U	0.2	U	0.19	U	0.18	U	0.2	U	0.19	U	0.2	U	0.18	U	0.19	U	0.17	U	0.18	U
Perfluoro(2-ethoxyethane)sulfonic Acid	PFEESA	113507-82-7	—	0.36	U	0.36	U	0.38	U	0.35	U	0.39	U	0.38	U	0.36	U	0.39	U	0.38	U	0.41	U	0.35	U	0.39	U	0.35	U	0.36	U
Perfluoro(4-ethylcyclohexane)sulfonic Acid	PFEtCHxS	646-83-3	—	0.35	U	0.34	U	0.36	U	0.34	U	0.37	U	0.36	U	0.34	U	0.37	U	0.36	U	0.39	U	0.34	U	0.37	U	0.33	U	0.34	U
Perfluoro(4-Methyoxybutanoic) Acid	PFMBA	863090-89-5	—	0.36	U	0.36	U	0.38	U	0.35	U	0.39	U	0.38	U	0.36	U	0.39	U	0.38	U	0.41	U	0.35	U	0.39	U	0.35	U	0.36	U
Perfluoro-3-methoxypropanoic Acid	PFMPA	377-73-1	—	0.36	U	0.36	U	0.38	U	0.35	U	0.39	U	0.38	U	0.36	U	0.39	U	0.38	U	0.41	U	0.35	U	0.39	U	0.35	U	0.36	U
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6	—	0.36	U	0.36	U	0.38	U	0.35	U	0.39	U	0.38	U	0.36	U	0.39	U	0.38	U	0.41	U	0.35	U	0.39	U	0.35	U	0.36	U
bis(trifluoromethylsulfonyl)amine	TFSI	82113-65-3	590	0.27	U	0.27	U	0.28	U	0.27	U	0.29	U	0.28	U	0.27	U	0.29	U	0.28	U	0.31	U	0.26	U	0.29	U	0.26	U	0.27	U

Summary of the PFAS Remedial Investigation's Fourth Quarter Groundwater Monitoring (cont'd)
Data Table - Groundwater Results Round IV - RI PFAS Release, RHBFSF, JBPHH Oahu HI

			Location	OWDFMW08B		OWDFMW08B		PFMW01A		PFMW01B		PFMW02A		PFMW02A		RHMW01R		RHMW02		RHMW03		RHMW04		RHMW05		RHMW06		RHMW07		RHMW08	
			COC ID	JV235		JV236		JV255		JV252		JV253		JV254		JV208		JV209		JV214		JV229		JV226		JV222		JV233		JV210	
			Matrix	WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG	
			Sample Type	N		FD		N		N		N		FD		N		N		N		N		N		N		N		N	
			Sample Date	7/28/2025		7/28/2025		7/31/2025		7/31/2025		7/31/2025		7/31/2025		7/14/2025		7/14/2025		7/16/2025		7/22/2025		7/16/2025		7/17/2025		7/29/2025		7/18/2025	
Chemical	Abbr.	Cas No.	PSL[a,b]	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Perfluoropropanoic Acid	PFPrA	422-64-0	980	**23**		**23**		**1**	J		R	**1**	J	**0.89**	J	0.71	U	0.73	U	**1**	J	**0.89**	J	**0.98**	J	**0.62**	J	**0.58**	J	0.77	U
Perfluorobutanoic Acid	PFBA	375-22-4	1800	**24**		**24**		**2.4**		**970**		0.72	U	0.72	U	0.71	U	0.73	U	**1.7**		**1.1**	J	**1.2**	J	0.72	U	0.75	U	**4.7**	
Perfluoropentanoic Acid	PFPeA	2706-90-3	—	**34**		**35**		**3.3**		**650**		**0.97**	J+	**0.9**	J+	0.35	U	0.36	U	**2.2**		**0.29**	J	0.38	U	0.36	U	**0.92**	J+	**1.7**	J+
Perfluorohexanoic Acid	PFHxA	307-24-4	990	**27**		**25**		**4.5**	J-	**1800**		0.77	U	0.76	U	**0.084**	J	**0.51**		**2.6**		**0.13**	J	**0.076**	J	**0.16**	J	0.77	U	**0.64**	J+
Perfluoroheptanoic Acid	PFHpA	375-85-9	—	**20**		**18**		**1.1**		**470**		0.77	U	0.76	U	**0.045**	J	**0.4**		**0.91**		**0.13**	J	**0.05**	J	**0.22**	J	0.77	U	**0.68**	
Perfluorooctanoic Acid	PFOA	335-67-1	4	**20**		**19**		**0.63**		**58**		0.27	U	0.27	U	0.26	U	**0.25**	J	**0.34**	J	0.29	U	0.28	U	0.27	U	0.28	U	**0.16**	
Perfluorononanoic Acid	PFNA	375-95-1	5.9	**3.9**		**3.9**		**0.2**	J	**0.77**		0.18	U	0.18	U	0.18	U	**0.11**	J	**0.11**	J	0.19	U	0.19	U	0.18	U	0.19	U	**0.38**	J
Perfluorodecanoic Acid	PFDA	335-76-2	0.52	**0.19**	J	**0.22**	J	0.2	U	**0.14**	J	0.18	U	0.18	U	0.18	U	**0.092**	J	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	**0.19**	J
Perfluoroundecanoic Acid	PFUnA	2058-94-8	—	0.28	U	0.27	U	0.3	U	0.28	U	0.27	U	0.27	U	0.26	U	0.27	U	0.28	U	0.29	U	0.28	U	0.27	U	0.28	U	0.29	U
Perfluorododecanoic Acid	PFDoA	307-55-1	—	0.18	U	0.18	U	0.2	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
Perfluorotridecanoic Acid	PFTrDA	72629-94-8	—	0.28	U	0.27	U	0.3	U	0.28	U	0.27	U	0.27	U	0.26	U	0.27	U	0.28	U	0.29	U	0.28	U	0.27	U	0.28	U	0.29	U
Perfluorotetradecanoic Acid	PFTA	376-06-7	—	0.28	U	0.27	U	0.3	U	0.28	U	0.27	U	0.27	U	0.26	U	0.27	U	0.28	U	0.29	U	0.28	U	0.27	U	0.28	U	0.29	U
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5	—	0.28	U	0.27	U	0.3	U	0.28	U	0.27	U	0.27	U	0.26	U		R	0.28	U	0.29	U	0.28	U	0.27	U	0.28	U	0.29	U
Perfluorooctadecanoic Acid	PFODA	16517-11-6	—	0.28	UJ	0.27	UJ		R	0.28	UJ	0.27	UJ	0.27	UJ	0.26	UJ	0.27	UJ	0.28	U	0.29	U	0.28	UJ	0.27	U	0.28	UJ	0.29	U
Perfluorobutanesulfonic Acid	PFBS	375-73-5	600	**12**		**11**		**0.11**	J	**140**		0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	**0.041**	J	**0.23**	J
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4	—	**0.75**		**0.8**		0.2	U	**140**		0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
Perfluorohexanesulfonic Acid	PFHxS	355-46-4	10	**12**		**12**		**0.16**	J	**480**		0.18	U	0.18	U	**0.056**	J	**0.069**	J	0.19	U	0.19	U	**0.079**	J	**0.046**	J	**0.079**	J	0.19	U
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8	—	**0.3**	J	**0.32**	J	0.2	U	**18**		0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
Perfluorooctanesulfonic Acid	PFOS	1763-23-1	4	**18**		**19**		**0.46**		**610**		0.18	U	0.18	U	0.18	U	**0.24**	J+	0.19	U	**0.13**	J	0.19	U	0.18	U	0.19	U	**0.094**	
Perfluoro-1-nonanesulfonic Acid	PFNS	68259-12-1	—	0.18	U	0.18	U	0.2	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
Perfluorodecanesulfonic Acid	PFDS	335-77-3	—	0.28	U	0.27	U	0.3	U	0.28	U	0.27	U	0.27	U	0.26	U	0.27	U	0.28	U	0.29	U	0.28	U	0.27	U	0.28	U	0.29	U
Perfluorododecanesulfonic Acid	PFDoS	79780-39-5	—	0.18	U	0.18	U	0.2	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
1H,1H,2H,2H-Perfluorohexane Sulfonic Acid	4:2 FTS	757124-72-4	—	0.74	U	0.72	U	0.8	U	**150**		0.72	U	0.72	U	0.71	U	0.73	U	0.75	U	0.77	U	0.75	U	0.72	U	0.75	U	0.77	UJ
1H,1H, 2H, 2H-Perfluorooctane Sulfonic Acid	6:2 FTS	27619-97-2	—	**6.4**	J	**6.3**		**73**	J-	**25000**		3.1	U	3.1	U	**2.3**		**11**		**19**		**3**		**1.1**	J	0.72	U	3.1	U	**1.2**	J
1H,1H, 2H, 2H-Perfluorodecane Sulfonic Acid	8:2 FTS	39108-34-4	—	0.74	U	0.72	U	0.8	U	0.74	U	0.72	U	0.72	U	0.71	U	0.73	U	0.75	U	0.77	U	0.75	U	0.72	U	0.75	U	0.77	U
1H,1H,2H,2H-perfluorododecane Sulfonic Acid	10:2 FTS	120226-60-0	—	0.74	U	0.72	U	0.8	U	0.74	U	0.72	U	0.72	U	0.71	U	0.73	U	0.75	U	0.77	U	0.75	U	0.72	U	0.75	U	0.77	U
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8	—	0.74	U	0.72	U	0.8	U	0.74	U	0.72	U	0.72	U	0.71	U	0.73	U	0.75	U	0.77	U	0.75	U	0.72	U	0.75	U	0.77	U
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2	—	0.74	U	0.72	U	0.8	U	0.74	U	0.72	U	0.72	U	0.71	U	0.73	U	0.75	U	0.77	U	0.75	U	0.72	U	0.75	U	0.77	U
Perfluorobutane Sulfonamide	PFBSA	30334-69-1	—	**0.21**	J	**0.2**	J	0.2	U	**8.6**		0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
Perfluorohexane Sulfonamide	PFHxSA	41997-13-1	—	0.18	U	0.18	U	0.2	U	**15**		0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
Perfluorooctane Sulfonamide	PFOSA	754-91-6	—	0.18	U	0.18	U	0.2	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
N-Methyl Perfluorooctane Sulfonamidoacetic Acid	NMeFOSAA	2355-31-9	—	0.18	U	0.18	U	0.2	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
N-Ethyl Perfluorooctane Sufonamidoacetic Acid	NEtFOSAA	2991-50-6	—	0.18	U	0.18	U	0.2	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
N-Methyl Perfluorooctane Sulfonamidoethanol	NMeFOSE	24448-09-7	—	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U
N-Ethyl Perfluorooctane Sulfonamidoethanol	NEtFOSE	1691-99-2	—	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U	1.1	U	1.1	U
Hexafluoropropylene oxide dimer Acid	HFPO-DA	13252-13-6	1.5	0.37	U	0.36	U	0.4	U	0.37	UJ	0.36	U	0.36	U	0.35	U	0.36	U	0.38	U	0.38	U	0.38	U	0.36	U	0.38	U	0.38	U
4,8-dioxa-3H-perfluorononanoic Acid	ADONA	919005-14-4	—	0.37	U	0.36	U	0.4	U	0.37	U	0.36	U	0.36	U	0.35	U	0.36	U	0.38	U	0.38	U	0.38	U	0.36	U	0.38	U	0.38	U
9-chlorohexadecafluoro-3-oxanone-1-sulfonic Acid	9Cl-PF3ONS	756426-58-1	—	0.37	U	0.36	U	0.4	U	0.37	U	0.36	U	0.36	U	0.35	U	0.36	U	0.38	U	0.38	U	0.38	U	0.36	U	0.38	U	0.38	U
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic Acid	11Cl-PF3OUdS	763051-92-9	—	0.37	U	0.36	U	0.4	U	0.37	U	0.36	U	0.36	U	0.35	U	0.36	U	0.38	U	0.38	U	0.38	U	0.36	U	0.38	U	0.38	U
3:3 Fluorotelomer Carboxylic Acid	3:3 FTCA	356-02-5	—	0.74	U	0.72	U	0.8	U	**55**		0.72	U	0.72	U	0.71	U	0.73	U	0.75	U	0.77	U	0.75	U	0.72	U	0.75	U	0.77	U
5:3 Fluorotelomer Carboxylic Acid	5:3 FTCA	914637-49-3	—	0.74	U	0.72	U	**1.1**	J	**4000**		0.72	U	0.72	U	0.71	U	0.73	U	0.75	U	0.77	U	0.75	U	0.72	U	0.75	U	0.77	U
7:3 Fluorotelomer Carboxylic Acid	7:3 FTCA	812-70-4	—	0.74	U	0.72	U	0.8	U	0.74	U	0.72	U	0.72	U	0.71	U	0.73	U	0.75	U	0.77	U	0.75	U	0.72	U	0.75	U	0.77	U
2H-Perfluoro-2-octenoic Acid	6:2 FTUCA	70887-88-6	—	0.18	U	0.18	U	**0.94**	J+	**16**		0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
2H-Perfluoro-2-decenoic Acid	8:2 FTUCA	70887-84-2	—	0.18	U	0.18	U	0.2	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.19	U
Perfluoro(2-ethoxyethane)sulfonic Acid	PFEESA	113507-82-7	—	0.37	U	0.36	U	0.4	U	0.37	U	0.36	U	0.36	U	0.35	U	0.36	U	0.38	U	0.38	U	0.38	U	0.36	U	0.38	U	0.38	U
Perfluoro(4-ethylcyclohexane)sulfonic Acid	PFEtCHxS	646-83-3	—	0.35	U	0.34	U	0.38	U	**0.85**		0.34	U	0.34	U	0.34	U	0.35	U	0.36	U	0.37	U	0.36	U	0.34	U	0.36	U	0.36	U
Perfluoro(4-Methyoxybutanoic) Acid	PFMBA	863090-89-5	—	0.37	U	0.36	U	0.4	U	0.37	U	0.36	U	0.36	U	0.35	U	0.36	U	0.38	U	0.38	U	0.38	U	0.36	U	0.38	U	0.38	U
Perfluoro-3-methoxypropanoic Acid	PFMPA	377-73-1	—	0.37	U	0.36	U	0.4	U	**1.1**		0.36	U	0.36	U	0.35	U	0.36	U	0.38	U	0.38	U	0.38	U	0.36	U	0.38	U	0.38	U
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6	—	0.37	U	0.36	U	0.4	U	0.37	U	0.36	U	0.36	U	0.35	U	0.36	U	0.38	U	0.38	U	0.38	U	0.36	U	0.38	U	0.38	U
bis(trifluoromethylsulfonyl)amine	TFSI	82113-65-3	590	**0.24**	J	**0.23**	J	0.3	U	0.28	U	0.27	U	0.27	U	0.26	U	0.27	U	**0.33**	J	0.29	U	0.28	U	0.27	U	0.28	U	0.29	U

Summary of the PFAS Remedial Investigation's Fourth Quarter Groundwater Monitoring (cont'd)
Data Table - Groundwater Results Round IV - RI PFAS Release, RHBFSF, JBPHH Oahu HI

			Location	RHMW17		RHMW17D		RHMW17S		RHMW18		RHMW20		RHMW21		RHMW2254-01		RHMW2254-01		RHP01		RHP02		RHP03		RHP03		RHP04A	
			COC ID	JV228		JV230		JV231		JV232		JV244		JV211		JV212		JV213		JV215		JV216		JV217		JV218		JV219	
			Matrix	WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG		WG	
			Sample Type	N		N		N		N		N		N		N		FD		N		N		N		FD		N	
			Sample Date	7/21/2025		7/21/2025		7/21/2025		7/24/2025		7/24/2025		7/14/2025		7/15/2025		7/15/2025		7/17/2025		7/17/2025		7/17/2025		7/17/2025		7/15/2025	
Chemical	Abbr.	Cas No.	PSL[a,b]	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Perfluoropropanoic Acid	PFPrA	422-64-0	980	**0.85**	J	0.71	U	0.72	U	0.72	U	0.78	U	**1**	J	**1.2**	J	**0.88**	J	**22**		**24**		**12**		**11**		**4.1**	
Perfluorobutanoic Acid	PFBA	375-22-4	1800	**1.6**		0.71	U	0.72	U	0.72	U	0.78	U	**0.95**	J+	0.75	U	0.73	U	**15**		**15**		**8.8**		**9.7**		**1.9**	
Perfluoropentanoic Acid	PFPeA	2706-90-3	—	**1.7**		0.35	U	0.36	U	0.36	U	0.39	U	**3.4**		**0.8**		**0.77**		**8.3**		**9.7**		**6.8**		**7.1**		**0.93**	
Perfluorohexanoic Acid	PFHxA	307-24-4	990	**1.2**		**0.27**	J	**0.068**	J	**0.16**	J	**0.1**	J	**1.3**		**0.62**		**0.74**		**4.1**		**4.5**		**3.7**		**4.1**		**0.57**	
Perfluoroheptanoic Acid	PFHpA	375-85-9	—	**0.58**		**0.16**	J	0.18	U	**0.099**	J	**0.085**	J	**0.38**	J	**0.4**		**0.43**		**3.2**		**3.9**		**3.3**		**3.6**		**0.6**	
Perfluorooctanoic Acid	PFOA	335-67-1	4	**0.27**	J	**0.27**	J	0.27	U	0.27	U	0.29	U	0.29	U	**0.83**		**0.68**		**5.8**		**6**		**4**		**4.2**		**1.3**	
Perfluorononanoic Acid	PFNA	375-95-1	5.9	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	**0.17**	J	**1.7**		**1.6**		**0.97**		**0.97**		**0.78**	
Perfluorodecanoic Acid	PFDA	335-76-2	0.52	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	**0.4**		**0.4**		**0.13**	J	**0.13**	J	0.19	U
Perfluoroundecanoic Acid	PFUnA	2058-94-8	—	0.27	U	0.27	U	0.27	U	0.27	U	0.29	U	0.29	U	0.28	U	0.27	U	0.29	U	0.3	U	0.29	U	0.29	U	0.28	U
Perfluorododecanoic Acid	PFDoA	307-55-1	—	0.18	U	0.18	U	0.18	U	**0.27**	J	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
Perfluorotridecanoic Acid	PFTrDA	72629-94-8	—	0.27	U	0.27	U	0.27	U	0.27	U	0.29	U	0.29	U	0.28	U	0.27	U	0.29	U	0.3	U	0.29	U	0.29	U	0.28	U
Perfluorotetradecanoic Acid	PFTA	376-06-7	—	0.27	U	0.27	U	0.27	U	0.27	U	0.29	U	0.29	U	0.28	U	0.27	U	0.29	U	0.3	U	0.29	U	0.29	U	0.28	U
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5	—	0.27	U	0.27	U	0.27	U	0.27	U	0.29	U	0.29	U	0.28	U	0.27	U	0.29	U	0.3	U	0.29	U	0.29	U	0.28	U
Perfluorooctadecanoic Acid	PFODA	16517-11-6	—	0.27	U	0.27	U	0.27	U	0.27	U	0.29	UJ	0.29	UJ	0.28	UJ	0.27	UJ	0.29	U	0.3	U	0.29	U	0.29	U	0.28	UJ
Perfluorobutanesulfonic Acid	PFBS	375-73-5	600	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	**0.66**		**0.66**		**2**		**3.6**		**3.1**		**3.4**		**0.93**	
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	**0.076**	J	**0.068**	J	**0.43**		**0.46**		**0.5**		**0.42**		**0.47**	
Perfluorohexanesulfonic Acid	PFHxS	355-46-4	10	0.18	U	**0.18**	J	**0.071**	J	0.18	U	0.19	U	0.19	U	**0.7**		**0.6**		**5.4**		**5.4**		**5.4**		**5.4**		**4.3**	
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	**0.23**	J	**0.24**	J	**0.14**	J	**0.16**	J	**0.081**	J
Perfluorooctanesulfonic Acid	PFOS	1763-23-1	4	**0.21**	J+	**0.28**	J	0.18	U	0.18	U	0.19	U	0.19	U	**0.73**		**0.79**		**14**		**14**		**6.3**		**6.6**		**2**	
Perfluoro-1-nonanesulfonic Acid	PFNS	68259-12-1	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
Perfluorodecanesulfonic Acid	PFDS	335-77-3	—	0.27	U	0.27	U	0.27	U	**0.15**	J	0.29	U	0.29	U	0.28	U	0.27	U	0.29	U	0.3	U	0.29	U	0.29	U	0.28	U
Perfluorododoecanesulfonic Acid	PFDoS	79780-39-5	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
1H,1H,2H,2H-Perfluorohexane Sulfonic Acid	4:2 FTS	757124-72-4	—	0.72	U	0.71	U	0.72	U	0.72	U	0.78	U	0.77	U	0.75	U	0.73	U	0.78	U	0.8	U	0.78	U	0.77	U	0.75	U
1H,1H, 2H, 2H-Perfluorooctane Sulfonic Acid	6:2 FTS	27619-97-2	—	**1.1**	J	**2.6**		**1.3**	J	0.72	U	0.78	U	**2.8**		0.75	U	0.73	U	**0.37**	J	0.8	U	**2.9**	J	**2**		0.75	U
1H,1H, 2H, 2H-Perfluorodecane Sulfonic Acid	8:2 FTS	39108-34-4	—	0.72	U	0.71	U	0.72	U	0.72	U	0.78	U	0.77	U	0.75	U	0.73	U	0.78	U	0.8	U	0.78	U	0.77	U	0.75	U
1H,1H,2H,2H-perfluorododecane Sulfonic Acid	10:2 FTS	120226-60-0	—	0.72	U	0.71	U	0.72	U	0.72	U	0.78	U	0.77	U	0.75	U	0.73	U	0.78	U	0.8	U	0.78	U	0.77	U	0.75	U
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8	—	0.72	U	0.71	U	0.72	U	**0.94**	J	0.78	U	0.77	U	0.75	U	0.73	U	0.78	U	0.8	U	0.78	U	0.77	U	0.75	U
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2	—	0.72	U	0.71	U	0.72	U	0.72	U	0.78	U	0.77	U	0.75	U	0.73	U	0.78	U	0.8	U	0.78	U	0.77	U	0.75	U
Perfluorobutane Sulfonamide	PFBSA	30334-69-1	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
Perfluorohexane Sulfonamide	PFHxSA	41997-13-1	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
Perfluorooctane Sulfonamide	PFOSA	754-91-6	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
N-Methyl Perfluorooctane Sulfonamidoacetic Acid	NMeFOSAA	2355-31-9	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
N-Ethyl Perfluorooctane Sufonamidoacetic Acid	NEtFOSAA	2991-50-6	—	0.18	U	0.18	U	0.18	U	**0.27**	J	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
N-Methyl Perfluorooctane Sulfonamidoethanol	NMeFOSE	24448-09-7	—	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U
N-Ethyl Perfluorooctane Sulfonamidoethanol	NEtFOSE	1691-99-2	—	1.1	U	1.1	U	1.1	U	1.1	U	1.2	U	1.2	U	1.1	U	1.1	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U
Hexafluoropropylene oxide dimer Acid	HFPO-DA	13252-13-6	1.5	0.36	U	0.35	U	0.36	U	0.36	U	0.39	U	0.39	U	0.37	U	0.36	U	0.39	U	0.4	U	0.39	U	0.39	U	0.38	U
4,8-dioxa-3H-perfluorononanoic Acid	ADONA	919005-14-4	—	0.36	U	0.35	U	0.36	U	0.36	U	0.39	U	0.39	U	0.37	U	0.36	U	0.39	U	0.4	U	0.39	U	0.39	U	0.38	U
9-chlorohexadecafluoro-3-oxanone-1-sulfonic Acid	9Cl-PF3ONS	756426-58-1	—	0.36	U	0.35	U	0.36	U	0.36	U	0.39	U	0.39	U	0.37	U	0.36	U	0.39	U	0.4	U	0.39	U	0.39	U	0.38	U
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic Acid	11Cl-PF3OUdS	763051-92-9	—	0.36	U	0.35	U	0.36	U	0.36	U	0.39	U	0.39	U	0.37	U	0.36	U	0.39	U	0.4	U	0.39	U	0.39	U	0.38	U
3:3 Fluorotelomer Carboxylic Acid	3:3 FTCA	356-02-5	—	0.72	U	0.71	U	0.72	U	0.72	U	0.78	U	0.77	U	0.75	U	0.73	U	0.78	U	0.8	U	0.78	U	0.77	U	0.75	U
5:3 Fluorotelomer Carboxylic Acid	5:3 FTCA	914637-49-3	—	0.72	U	0.71	U	0.72	U	0.72	U	0.78	U	0.77	U	0.75	U	0.73	U	0.78	U	0.8	U	0.78	U	0.77	U	0.75	U
7:3 Fluorotelomer Carboxylic Acid	7:3 FTCA	812-70-4	—	0.72	U	0.71	U	0.72	U	0.72	U	0.78	U	0.77	U	0.75	U	0.73	U	0.78	U	0.8	U	0.78	U	0.77	U	0.75	U
2H-Perfluoro-2-octenoic Acid	6:2 FTUCA	70887-88-6	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
2H-Perfluoro-2-decenoic Acid	8:2 FTUCA	70887-84-2	—	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.19	U	0.19	U	0.18	U	0.19	U	0.2	U	0.19	U	0.19	U	0.19	U
Perfluoro(2-ethoxyethane)sulfonic Acid	PFEESA	113507-82-7	—	0.36	U	0.35	U	0.36	U	0.36	U	0.39	U	0.39	U	0.37	U	0.36	U	0.39	U	0.4	U	0.39	U	0.39	U	0.38	U
Perfluoro(4-ethylcyclohexane)sulfonic Acid	PFEtCHxS	646-83-3	—	0.34	U	0.34	U	0.34	U	0.34	U	0.37	U	0.37	U	0.36	U	0.34	U	0.37	U	0.38	U	0.37	U	0.37	U	0.36	U
Perfluoro(4-Methyoxybutanoic) Acid	PFMBA	863090-89-5	—	0.36	U	0.35	U	0.36	U	0.36	U	0.39	U	0.39	U	0.37	U	0.36	U	0.39	U	0.4	U	0.39	U	0.39	U	0.38	U
Perfluoro-3-methoxypropanoic Acid	PFMPA	377-73-1	—	0.36	U	0.35	U	0.36	U	0.36	U	0.39	U	0.39	U	0.37	U	0.36	U	0.39	U	0.4	U	0.39	U	0.39	U	0.38	U
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6	—	0.36	U	0.35	U	0.36	U	0.36	U	0.39	U	0.39	U	0.37	U	0.36	U	0.39	U	0.4	U	0.39	U	0.39	U	0.38	U
bis(trifluoromethylsulfonyl)amine	TFSI	82113-65-3	590	0.27	U	0.27	U	0.27	U	0.27	U	0.29	U	0.29	U	0.28	U	0.27	U	0.29	U	0.3	U	0.29	U	0.29	U	0.28	U

Summary of the PFAS Remedial Investigation's Fourth Quarter Groundwater Monitoring (cont'd)
Data Table - Groundwater Results Round IV - RI PFAS Release, RHBFSF, JBPHH Oahu HI

			Location	RHP04B		RHP04C		RHP05		RHP06		RHP07		RHP08		RHP08B	
			COC ID	JV237		JV238		JV223		JV220		JV227		JV221		JV243	
			Matrix	WG		WG		WG		WG		WG		WG		WG	
			Sample Type	N		N		N		N		N		N		N	
			Sample Date	7/22/2025		7/22/2025		7/18/2025		7/15/2025		7/16/2025		7/15/2025		7/24/2025	
Chemical	Abbr.	Cas No.	PSL[a,b]	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Perfluoropropanoic Acid	PFPrA	422-64-0	980	0.72	U	0.74	U	**3.4**		**12**		**17**		**2.6**		**0.81**	J
Perfluorobutanoic Acid	PFBA	375-22-4	1800	**1.3**	J	**1.8**		**3.3**		**6.3**		**10**		**1.5**		**1.2**	J
Perfluoropentanoic Acid	PFPeA	2706-90-3	—	**0.49**	J+	**0.95**	J+	**3.8**		**7.3**		**5.6**		**2**		0.38	U
Perfluorohexanoic Acid	PFHxA	307-24-4	990	**0.24**	J	**0.17**	J	**3**		**4.8**		**2.9**		**1.7**		0.19	U
Perfluoroheptanoic Acid	PFHpA	375-85-9	—	**0.059**	J	**0.041**	J	**1.9**	J-	**4.1**		**2.6**		**1.1**		0.19	U
Perfluorooctanoic Acid	PFOA	335-67-1	4	0.27	U	0.28	U	**3.8**		**4.1**		**4.4**		**2.4**		0.29	U
Perfluorononanoic Acid	PFNA	375-95-1	5.9	0.18	U	0.18	U	**0.93**		**0.89**		**0.85**		**0.092**	J	0.19	U
Perfluorodecanoic Acid	PFDA	335-76-2	0.52	0.18	U	0.18	U	0.18	U	0.19	U	**0.21**	J	0.17	U	0.19	U
Perfluoroundecanoic Acid	PFUnA	2058-94-8	—	0.27	U	0.28	U	0.27	U	0.28	U	0.28	U	0.26	U	0.29	U
Perfluorododecanoic Acid	PFDoA	307-55-1	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
Perfluorotridecanoic Acid	PFTrDA	72629-94-8	—	0.27	U	0.28	U	0.27	U	0.28	U	0.28	U	0.26	U	0.29	U
Perfluorotetradecanoic Acid	PFTA	376-06-7	—	0.27	U	0.28	U	0.27	U	0.28	U	0.28	U	0.26	U	0.29	U
Perfluorohexadecanoic Acid	PFHxDA	67905-19-5	—	0.27	U	0.28	U	0.27	U	0.28	U	0.28	U	0.26	U	0.29	U
Perfluorooctadecanoic Acid	PFODA	16517-11-6	—	0.27	U	0.28	U	0.27	U	0.28	UJ	0.28	U	0.26	UJ	0.29	U
Perfluorobutanesulfonic Acid	PFBS	375-73-5	600	0.18	U	0.18	U	**1.2**		**1.9**		**1.5**		**1.3**		0.19	U
Perfluoropentanesulfonic Acid	PFPeS	2706-91-4	—	0.18	U	0.18	U	**0.45**		**0.43**		**0.47**		**0.21**	J	0.19	U
Perfluorohexanesulfonic Acid	PFHxS	355-46-4	10	**0.05**	J	**0.17**	J	**5.6**		**3.5**		**5.3**		**2.5**		0.19	U
Perfluoroheptanesulfonic Acid	PFHpS	375-92-8	—	0.18	U	0.18	U	**0.13**	J	**0.11**	J	**0.21**	J	**0.074**	J	0.19	U
Perfluorooctanesulfonic Acid	PFOS	1763-23-1	4	0.18	U	**0.2**	J+	**4.2**		**6.1**		**9.9**		**2.1**		0.19	U
Perfluoro-1-nonanesulfonic Acid	PFNS	68259-12-1	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
Perfluorodecanesulfonic Acid	PFDS	335-77-3	—	0.27	U	0.28	U	0.27	U	0.28	U	0.28	U	0.26	U	0.29	U
Perfluorodoodecanesulfonic Acid	PFDoS	79780-39-5	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
1H,1H,2H,2H-Perfluorohexane Sulfonic Acid	4:2 FTS	757124-72-4	—	0.72	U	0.74	U	0.71	U	0.75	U	0.74	U	0.7	U	0.76	U
1H,1H, 2H, 2H-Perfluorooctane Sulfonic Acid	6:2 FTS	27619-97-2	—	**1.9**		0.74	U	**7.1**		**4.3**		**0.81**	J	**0.83**	J	0.76	U
1H,1H, 2H, 2H-Perfluorodecane Sulfonic Acid	8:2 FTS	39108-34-4	—	0.72	U	0.74	U	0.71	U	0.75	U	0.74	U	0.7	U	0.76	U
1H,1H,2H,2H-perfluorododecane Sulfonic Acid	10:2 FTS	120226-60-0	—	0.72	U	0.74	U	0.71	U	0.75	U	0.74	U	0.7	U	0.76	U
N-Methyl Perfluorooctane Sulfonamide	NMeFOSA	31506-32-8	—	0.72	U	0.74	U	0.71	U	0.75	U	0.74	U	0.7	U	0.76	U
N-Ethyl Perfluorooctane Sulfonamide	NEtFOSA	4151-50-2	—	0.72	U	0.74	U	0.71	U	0.75	U	0.74	U	0.7	U	0.76	U
Perfluorobutane Sulfonamide	PFBSA	30334-69-1	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
Perfluorohexane Sulfonamide	PFHxSA	41997-13-1	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
Perfluorooctane Sulfonamide	PFOSA	754-91-6	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
N-Methyl Perfluorooctane Sulfonamidoacetic Acid	NMeFOSAA	2355-31-9	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
N-Ethyl Perfluorooctane Sufonamidoacetic Acid	NEtFOSAA	2991-50-6	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
N-Methyl Perfluorooctane Sulfonamidoethanol	NMeFOSE	24448-09-7	—	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.1	U
N-Ethyl Perfluorooctane Sulfonamidoethanol	NEtFOSE	1691-99-2	—	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1	U	1.1	U
Hexafluoropropylene oxide dimer Acid	HFPO-DA	13252-13-6	1.5	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.35	U	0.38	U
4,8-dioxa-3H-perfluorononanoic Acid	ADONA	919005-14-4	—	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.35	U	0.38	U
9-chlorohexadecafluoro-3-oxanone-1-sulfonic Acid	9Cl-PF3ONS	756426-58-1	—	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.35	U	0.38	U
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic Acid	11Cl-PF3OUdS	763051-92-9	—	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.35	U	0.38	U
3:3 Fluorotelomer Carboxylic Acid	3:3 FTCA	356-02-5	—	0.72	U	0.74	U	0.71	U	0.75	U	0.74	U	0.7	U	0.76	U
5:3 Fluorotelomer Carboxylic Acid	5:3 FTCA	914637-49-3	—	0.72	U	0.74	U	0.71	U	0.75	U	0.74	U	0.7	U	0.76	U
7:3 Fluorotelomer Carboxylic Acid	7:3 FTCA	812-70-4	—	0.72	U	0.74	U	0.71	U	0.75	U	0.74	U	0.7	U	0.76	U
2H-Perfluoro-2-octenoic Acid	6:2 FTUCA	70887-88-6	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
2H-Perfluoro-2-decenoic Acid	8:2 FTUCA	70887-84-2	—	0.18	U	0.18	U	0.18	U	0.19	U	0.18	U	0.17	U	0.19	U
Perfluoro(2-ethoxyethane)sulfonic Acid	PFEESA	113507-82-7	—	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.35	U	0.38	U
Perfluoro(4-ethylcyclohexane)sulfonic Acid	PFEtCHxS	646-83-3	—	0.34	U	0.35	U	0.34	U	0.35	U	0.35	U	0.33	U	0.36	U
Perfluoro(4-Methyoxybutanoic) Acid	PFMBA	863090-89-5	—	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.35	U	0.38	U
Perfluoro-3-methoxypropanoic Acid	PFMPA	377-73-1	—	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.35	U	0.38	U
Nonafluoro-3,6-Dioxaheptanoic Acid	NFDHA	151772-58-6	—	0.36	U	0.37	U	0.36	U	0.37	U	0.37	U	0.35	U	0.38	U
bis(trifluoromethylsulfonyl)amine	TFSI	82113-65-3	590	0.27	U	0.28	U	0.27	U	0.28	U	0.28	U	0.26	U	0.29	U

Notes:
Units are in parts per trillion (ppt). Analysis conducted using EPA Method 1633 (EPA 2024).

[a]	EPA tap water RSL using a THQ of 0.1 and a target cancer risk of 1E-06 – November 2024 (EPA 2024).
[b]	PSLs consistent with DoD memorandum (ASD 2025). PSLs are identifed in Worksheet #15.
—	not applicable
Bold and shaded	analyte was detected above the PSLs
Bold	analyte was detected
Grey	analyte is reported as a non-detect
abbr.	abbreviated chemical name
Cas No.	chemical abstracts service registry number
COC	chain of custody
EPA	Environmental Protection Agency, United States
FD	field duplicate sample
ID	identification
J	the reported result was an estimated value with an unknown bias
J-	the result was an estimated quantity, but the result may be biased low
J+	the result was an estimated quantity, but the result may be biased high
LOD	limit of detection
N	primary sample
ppt	parts per trillion
PSL	project screening level
Q	data qualifier
R =	Rejected. The data is unusable (the analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from guideline acceptance criteria. Either resampling or re-analysis is necessary to determine the presence or absence of the rejected analyte.
RSL	regional screening level
U	the analyte was not detected and was reported as less than the LOD
UJ	the analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate.
WG	groundwater

References:

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