BRAC Program Management Office East
Philadelphia, Pennsylvania

Final
2024 Summary Report for Private Water Well Sampling

Former Naval Air Station Joint Reserve Base Willow Grove
Horsham Township, Pennsylvania

September 19, 2025

VOLUME 1 OF 3
TEXT, TABLE, AND ATTACHMENT 1

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1.0 INTRODUCTION

Tetra Tech has prepared this *2024 Summary Report for Private Water Well Sampling* for the Base Realignment and Closure Program Management Office East (BRAC PMOE) of the Naval Facilities Engineering Systems Command (NAVFAC) as part of Contract Task Order (CTO) Number WE04 under the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract number N6247016D9008. Some private well sampling for the project was performed in October to December 2024 under Warminster CTO Number N4008518F5769 for funding reasons, as agreed to by the Navy. This document includes the results from the sampling of groundwater from 51 privately-owned drinking water wells in 2024 located near the former Naval Air Station Joint Reserve Base (NASJRB) Willow Grove site in Horsham Township, Montgomery County, Pennsylvania. The objective of the program was to determine the concentrations of per- and polyfluoroalkyl substances (PFAS), if present, in these wells.

Pennsylvania Department of Environmental Protection (PADEP) drinking water standards, or maximum contaminant levels (MCL), were promulgated on January 14, 2023 (PADEP, 2023). Since May 2023, the Navy has taken an actionable response by providing an alternative water source based on these levels. The Pennsylvania Department of Environmental Protection (PADEP) MCL for perfluorooctanoic acid (PFOA) is 14 nanograms per liter (ng/L), and the MCL for perfluorooctanesulfonic acid (PFOS) is 18 ng/L. At properties where PFOA and PFOS were detected at or above the PADEP MCLs, the Navy has offered bottled water to locations based on sample results collected since May 2023. Additionally, the Navy initiated resampling of locations where laboratory limits of detection were reported above PADEP MCLs, or sample results were collected prior to August 2020 (i.e., more than three years old).

As further described below, analytical results of the 2024 private water well sampling program were compared to:

- PFOA and PFOS PADEP MCLs (PADEP, 2023).
- PFOA, PFOS, perfluorobutanesulfonic acid (PFBS), perfluorononanoic acid (PFNA), perfluorohexanoic acid (PFHxA), perfluorohexanesulfonic acid (PFHxS), and hexafluoropropylene oxide dimer acid (HFPO-DA) Environmental Protection Agency (EPA) residential tap water RSLs (EPA, 2023), per the current off-property drinking water SAP (Tetra Tech, 2020) and SAP Field Task Modification Requests (FTMRs) (Tetra Tech, 2021, 2022).

Decision Rules from the *Final Sampling and Analysis Plan for Off-Base Drinking Water Per- and Polyfluoroalkyl Substances Sampling* and FTMR Form 2 and 3 were revised in

2023 to address the publication of the PADEP MCLs and applied to the 2023 and 2024 monitoring program (Tetra Tech 2020, 2021, 2022). The 2023 Decision Rules as applied to the drinking water program in 2023 and 2024 are provided in Attachment 1.

The Navy applied the PADEP MCLs for PFOA and PFOS to the 2024 drinking water sampling results as action levels for supplying alternate drinking water. The sampling program also categorized wells (locations) for potential resampling based on analytical results in comparison to the PADEP MCLs. The following summarizes Decision Rules that were first implemented in 2023 and incorporated the PADEP MCLs for identifying locations for specific resampling schedules (Tetra Tech, 2023):

- Four Consecutive Sampling Events: If a location exceeds 50 percent of the PFOA or PFOS PADEP MCLs, or based on judgment by the Project Team (Navy/EPA/PADEP) due to proximity to other locations that exceed the PFOA or PFOS PADEP MCLs, then affected residence(s) will be sampled for four consecutive sampling events.
- Annual Sampling: If a location within the category of four consecutive sampling events completes the four consecutive sampling events with PFOA and PFOS concentrations below their respective PADEP MCLs, then it will be sampled annually moving forward.
- Sample Every Three Years: If it has been three or more years since the last sampling event for a property with previous sampling results below the PADEP MCLs that are not connected to the municipal water supply, collect one sample and assess against existing Decision Rules.

The EPA issued PFAS drinking water regulations, effective on June 25, 2024 (EPA, 2024), and the Office of the Assistant Secretary of Defense (OASD) issued a policy memorandum (dated September 3, 2024) for application of the EPA PFAS MCLs to "DoD's ongoing PFAS cleanups and prioritiz(ing) actions to address private drinking water wells with the highest levels of PFAS from DoD activities." (DoD, 2024). The OASD policy memorandum directs that removal actions be initiated for private drinking water wells impacted by PFAS from DoD activities where concentrations are known to be at or above three times the EPA PFAS National Primary Drinking Water Regulation (NPDWR) MCL values. The federal MCLs for six regulated PFAS are: PFOA (4 ng/L), PFOS (4 ng/L), PFNA (10 ng/L), PFHxS (10 ng/L), HFPO-DA (10 ng/L), and a hazard index (HI) MCL of one for the combination of two or more of four PFAS (PFBS, PFNA, PFHxS, and HFPO-DA) in a drinking water sample. As such, the three times these MCLs as DoD interim removal action levels are the following for individual PFAS: PFOA (12 ng/L), PFOS (12 ng/L), PFHxS (30 ng/L), PFNA (30 ng/L), and HFPO-DA (30 ng/L).

For those PFAS included in the HI MCL, the interim actionable level is an HI of three for a combination of two or more of the following analytes, PFBS, PFNA, PFHxS, and HFPO-DA in a drinking water sample (DoD, 2024).

The Navy is currently drafting an updated SAP for the off-base drinking water sampling that incorporates the PFAS policy direction of the OASD memorandum; however, for the 2024 sampling program, the PADEP MCLs for PFOA and PFOS were the action levels for removal action and decision-making on resampling private drinking water wells.

2.0 SAMPLING AND ANALYSIS ACTIVITIES

The 2024 private water well samples were collected between January 3, 2024 and September 10, 2024, in accordance with approved SAPs (Tetra Tech, 2020; 2021; 2022), the decision rules discussed in Section 1.0 implemented in 2023 and 2024. Each private water well sampling location was assigned a unique sample identifier to protect personal information such as street addresses and names of property owners. A total of 51 private water well locations and six field duplicate samples were collected (Table 1). One of these 51 locations, location WGNA-4958, had a sample originally collected at a post-treatment location due to the system not being identified during the first sampling event; however, the location was re-visited at a later date at which time and the location of the treatment system was identified and a pre-treatment sample was collected. The treatment system included a filter (unknown material) and a water softener and was installed by the private homeowner. A summary of the sampling status shown in Table 1 is provided below. Locations have been divided into two main categories: “First Sampled in 2024” and “Resampled in 2024” for ease of discussion:

- Locations with Private Water Wells First Sampled in 2024: 21
    - Locations Offered Bottled Water: 11
      These are private water wells with sampling results above the PFOA and/or PFOS PADEP MCLs.
    - Locations in the Second Sample Needed Category: 7
      These are private water wells with sampling results less than 50 percent of the PFOA and/or PFOS PADEP MCLs.
    - Locations in the Four Consecutive Samples Category: 3
      These are private water wells with sampling results more than 50 percent of the PFOA and/or PFOS PADEP MCLs, but still below the PFOA and/or PFOS PADEP MCLs.

        - Of the three locations in the Four Consecutive Samples category identified above that had sample results below the PADEP MCLs, one was sampled a second time in 2024 (WGNA-4938).

    - Locations in the Annual Sampling Category: 0
      These are private water wells that have completed the four consecutive sampling events with PFOA and/or PFOS concentrations below the PADEP MCLs and will now be in the annual sampling category.
    - Locations in the Sample Every Three Years Category: 0
      These are private water wells that have not been sampled for three or more years and have previous sample results below the PADEP MCLs.

- Locations with Private Water Wells Resampled in 2024: 30
    - Locations Offered Bottled Water: 3
      These are private water wells with sampling results above the PFOA and/or PFOS PADEP MCLs.
    - Locations in the Second Sample Needed Category: 0
      These are private water wells with sampling results less than 50 percent of the PFOA and/or PFOS PADEP MCLs.
    - Locations in the Four Consecutive Samples Category: 6
      These are private water wells with sampling results more than 50 percent of the PFOA and/or PFOS PADEP MCLs, but still below the PFOA and/or PFOS PADEP MCLs.
    - Locations in the Annual Sampling Category: 0
      These are private water wells that have completed the four consecutive sampling events with PFOA and/or PFOS concentrations below the PADEP MCLs and will now be sampled annually moving forward.
    - Locations in the Sample Every Three Years Category: 21
      These are private water wells that have not been sampled for three or more years and have previous sample results below the PADEP MCLs.

All samples were analyzed by Battelle Memorial Institute in Norwell, Massachusetts, using EPA Method 537.1, Version 1.0. The analytical laboratory is accredited by both the DoD Environmental Laboratory Accreditation Program and the PADEP. The following 18 PFAS compounds were analyzed and reported:

- 11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
- 9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)
- 4,8-dioxa-3H-perfluorononanoic acid (ADONA)

- HFPO-DA
- n-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
- n-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
- PFBS
- Perfluorodecanoic acid (PFDA)
- Perfluorododecanoic acid (PFDoA)
- Perfluoroheptanoic acid (PFHpA)
- PFHxA
- PFHxS
- PFNA
- PFOA
- PFOS
- Perfluorotetradecanoic acid (PFTeA)
- Perfluorotridecanoic acid (PFTrDA)
- Perfluoroundecanoic acid (PFUnA)

3.0 DATA VALIDATION

The laboratory analytical results from the 2024 private well monitoring program were reviewed and validated in accordance with the following EPA and DoD guidance, as applicable:

- EPA *Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS), Method 537.1* (EPA, 2018a).

- EPA Data Review and Validation Guidelines for PFAS Analyzed Using EPA Method 537 (EPA, 2018b).

The results of the data validation indicated that the data could be used for its intended purposes as part of the 2024 private well sampling program.

The validated data were then compared to:

Analyte							
	PFOA	PFOS	PFBS	PFNA	PFHxA	PFHxS	HFPO-DA
Units:	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PADEP MCL(1)	**14**	**18**	NC	NC	NC	NC	NC
EPA Tap Water RSL(2)	4	6	**600**	**5.9**	**990**	**39**	**6**

Bold text indicates which criteria were used to compare with validated results.
NC - No criteria
1 - (PADEP, 2023).
2 - (EPA, 2023).

The results were evaluated using the decision rules implemented in May 2023. The results of these comparisons are discussed in Section 4.0.

4.0 RESULTS

During the 2024 sampling period, a total of 59 PFAS samples were collected from 51 private water well locations, with one of these locations (WGNA-4958) having both a pre-treatment and post-treatment sample collected from it (as seen in Table 1). Duplicate samples were collected at six well locations, and the sample results were consistent with the associated parent sample. Laboratory analytical data packages and validated analytical data reports are provided as Attachment 2. A comparison of the results to applicable criteria is provided below.

- PADEP MCLs
  - Groundwater samples from 14 well locations had reported levels of PFOA and/or PFOS greater than or equal to the respective PADEP MCLs. Bottled water was offered to all 14 properties. It should be noted that the sample collected at well location WGNA-4958 was a pre-treatment sample that had PFOA concentrations greater than the respective PADEP MCLs.
  - Groundwater samples from 29 well locations had reported detectable levels of PFOA and/or PFOS less than their respective PADEP MCLs.
  - Groundwater samples from nine well locations did not have reported detectable levels of PFOS or PFOA. It should be noted that the sample collected at well location WGNA-4958 was a post-treatment sample that did not have detectable levels of PFOS or PFOA. The first sample collected from WGNA-4958 was post-treatment due to the system initially not being identified, but once the system was identified a pre-treatment sample was collected, as stated above.

- EPA RSLs – As discussed above, EPA Tap Water RSLs are risk screening levels only and are not considered actionable levels.
  - PFOA
    - 31 of 51 well locations had detections above the PFOA EPA Tap Water RSL.
    - 12 of 51 well locations had detections that were below the PFOA EPA Tap Water RSL.
    - 8 of 51 well locations did not have detectable levels of PFOA.
  - PFOS
    - 20 of 51 well locations had detections above the PFOS EPA Tap Water RSL.
    - 20 of 51 well locations had detections that were below the PFOS EPA Tap Water RSL.
    - 11 of 51 well locations did not have detectable levels of PFOS.
  - PFBS
    - No well location had detections above the PFBS EPA Tap Water RSL.
    - 41 of 51 well locations had detections that were below the PFBS EPA Tap Water RSL.
    - 10 of 51 wells did not have detectable levels of PFBS.
  - PFNA
    - No well location had detections above the PFNA EPA Tap Water RSL.
    - 35 of 51 well locations had detections that were below the PFNA EPA Tap Water RSL.
    - 16 of 51 wells did not have detectable levels of PFNA.
  - PFHxA
    - No well location had detections above the PFHxA EPA Tap Water RSL.
    - 39 of 51 well locations had detections that were below the PFHxA EPA Tap Water RSL.
    - 12 of 51 wells did not have detectable levels of PFHxA.
  - PFHxS
    - No well location had detections above the PFHxS EPA Tap Water RSL.
    - 36 of 51 well locations had detections that were below the PFHxS EPA Tap Water RSL.
    - 15 of 51 wells did not have detectable levels of PFHxS.
  - HFPO-DA
    - No well locations had detectable levels of HFPO-DA.

5.0 REFERENCES

DoD, 2024. *Prioritization of Department of Defense Cleanup Actions to Implement the Federal Drinking Water Standards for Per- and Polyfluoroalkyl Substances Under the Defense Environmental Restoration Program.* September 3.

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EPA, 2016b. *Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS), EPA 882-R-16-004*. Office of Water. Washington, D.C. May.

EPA, 2018a. *Determination of Selected Per- and Polyfluorinated Alkyl Substances in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS), Method 537.1*. EPA/600/R-18/352. U.S. Environmental Protection Agency, Washington, DC. November.

EPA, 2018b. *Data Review and Validation Guidelines for Perfluoroalkyl Substances (PFASs) Analyzed Using EPA Method 537* (EPA 910-R-18-001). November.

EPA, 2022. *Technical Fact Sheet: Drinking Water Health Advisories for Four PFAS (PFOA, PFOS, GenX chemicals, and PFBS)*. Office of Water. EPA 822-F-22-002. June.

EPA, 2023. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*, prepared by Oak Ridge National Laboratory. https://www.epa.gov/risk/regional-screening-levels-rsls. November.

EPA, 2024. *PFAS National Primary Drinking Water Regulation (NPDWR).* Federal Register Volume 89, Number 82 (Federal Register, 2024). April 26.

PADEP (Pennsylvania Department of Environmental Protection), 2023. *PFAS MCL Rule.* Bureau of Safe Drinking Water, Drinking Water Management. https://www.dep.pa.gov/Business/Water/BureauSafeDrinkingWater/DrinkingWaterMgmt/Regulations/Pages/PFAS-MCL-Rule.aspx

Tetra Tech, 2020. *Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Off-Base Drinking Water Per- and Polyfluoroalkyl Substances Sampling, Former Naval Air Station Joint Reserve Base Willow Grove, Horsham, Pennsylvania and Former Naval Air Warfare Center Warminster, Warminster, Pennsylvania*. October.

Tetra Tech, 2021. *Field Task Modification Request Form 2 for Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Off-Base Drinking Water Per- and Polyfluoroalkyl Substances Sampling, Former Naval Air Station Joint Reserve Base Willow Grove, Horsham, Pennsylvania and Former Naval Air Warfare Center Warminster, Warminster, Pennsylvania*. September.

Tetra Tech, 2022. *Internal Draft Field Task Modification Request Form 3 for Final Sampling and Analysis Plan (Field Sampling Plan and Quality Assurance Project Plan) for Off-Base Drinking Water Per- and Polyfluoroalkyl Substances Sampling, Former Naval Air Station Joint Reserve Base Willow Grove, Horsham, Pennsylvania and Former Naval Air Warfare Center Warminster, Warminster, Pennsylvania*. October.

Tetra Tech, 2023. *Final 2023 Summary Report for Private Water Well Sampling Former Naval Air Station Joint Reserve Base Willow Grove, Horsham Township, Pennsylvania.* August.

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TABLE

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Table 1: 2024 PFAS Private Well Sampling Results
Former Naval Air Station Joint Reserve Base Willow Grove
Horsham Township, Pennsylvania

Sample Number	Resample/Dup	Location	Status	Sample Date	PFBS	PFHpA	PFHxS	PFNA	11CL-PF3OUdS	ADONA	9Cl-PF3ONS	HFPO-DA	NEtFOSAA
				PADEP MCL:[1,3]	NC	NC	NC	NC	NC	NC	NC	NC	NC
				EPA RSL:[2]	600	NC	39	5.9	NC	NC	NC	6	NC
				Units:	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
WGNA-010324-RW-4935		4935	Need Second Sample	01/03/2024	0.465 J	1.02 J	U	U	U	U	U	U	U
WGNA-011624-RW-4936		4936	Need Second Sample	01/16/2024	0.408 J	0.623 J	0.77 J	0.548 J	U	U	U	U	U
WGNA-020124-RW-3826		3826	Four Consecutive Sampling Events	02/01/2024	10.4	2.64	0.955 J	1.27 J	U	U	U	U	U
WGNA-020124-RW-3930		3930	Sample every three years	02/01/2024	U	U	U	U	U	U	U	U	U
WGNA-020124-RW-3930-D	Dup	3930	Sample every three years	02/01/2024	U	U	U	U	U	U	U	U	U
WGNA-020124-RW-4805		4805	Four Consecutive Sampling Events	02/01/2024	2.87	2.64	1.25 J	1.12 J	U	U	U	U	U
WGNA-020624-RW-3370		3370	Sample every three years	02/06/2024	9.01	1.93 J	1.74 J	1.2 J	U	U	U	U	U
WGNA-021424-RW-0629		0629	Four Consecutive Sampling Events	02/14/2024	11.8	2.81	0.852 J	1.7 J	U	U	U	U	U
WGNA-021424-RW-3241		3241	Sample every three years	02/14/2024	U	U	0.419 J	U	U	U	U	U	U
WGNA-021524-RW-0131		0131	Sample every three years	02/15/2024	0.986 J	1.43 J	0.481 J	0.527 J	U	U	U	U	U
WGNA-021524-RW-0936		0936	Sample every three years	02/15/2024	1.08 J	3.03	U	0.547 J	U	U	U	U	U
WGNA-022124-RW-3526		3526	Four Consecutive Sampling Events	02/21/2024	4.36	2.61	1.56 J	1.41 J	U	U	U	U	U
WGNA-022124-RW-3601		3601	Four Consecutive Sampling Events	02/21/2024	4.21	2.63	1.2 J	1.18 J	U	U	U	U	U
WGNA-022724-RW-3782		3782	Sample every three years	02/27/2024	2.18 J	3.08	0.969 J	1.32 J	U	U	U	U	U
WGNA-022724-RW-3782-D	Dup	3782	Sample every three years	02/27/2024	2.13 J	2.94	0.95 J	1.24 J	U	U	U	U	U
WGNA-022724-RW-4799		4799	Sample every three years	02/27/2024	U	U	U	U	U	U	U	U	U
WGNA-022824-RW-3358		3358	Sample every three years	02/28/2024	U	U	U	U	U	U	U	U	U
WGNA-022824-RW-4938		4938	Four Consecutive Sampling Events	02/28/2024	4.68	2.5	0.961 J	0.998 J	U	U	U	U	U
WGNA-022924-RW-3352		3352	Sample every three years	02/29/2024	U	U	U	U	U	U	U	U	U
WGNA-030524-RW-3334		3334	Sample every three years	03/05/2024	U	U	U	U	U	U	U	U	U
WGNA-030624-RW-4837		4837	Sample every three years	03/06/2024	U	U	U	U	U	U	U	U	U
WGNA-030724-RW-3451		3451	Sample every three years	03/07/2024	U	U	U	U	U	U	U	U	U
WGNA-030724-RW-3752		3752	Four Consecutive Sampling Events	03/07/2024	7.66	3.07	1.84 J	1.87 J	U	U	U	U	U
WGNA-031324-RW-3442		3442	Bottled Water	03/13/2024	10.9	6.04	3.26	2.97	U	U	U	U	U
WGNA-031324-RW-3442-D	Dup	3442	Bottled Water	03/13/2024	12.6	6.46	3.73	3.2	U	U	U	U	U
WGNA-031924-RW-0692		0692	Sample every three years	03/19/2024	0.618 J	0.466 J	U	U	U	U	U	U	U
WGNA-040324-RW-3455		3455	Bottled Water	04/03/2024	20.7	5.9	3.23	2.59	U	U	U	U	U
WGNA-040324-RW-4939		4939	Need Second Sample	04/03/2024	1.24 J	3.43	1.66 J	1.54 J	U	U	U	U	U
WGNA-040324-RW-4941		4941	Need Second Sample	04/03/2024	1.01 J	1.87 J	0.658 J	0.5 J	U	U	U	U	U
WGNA-041024-RW-4863		4863	Sample every three years	04/10/2024	3.57	2.17 J	U	0.38 J	U	U	U	U	U
WGNA-041124-RW-3511		3511	Connection Offered - Bottled Water	04/11/2024	4.48	5.44	2.32	2.1 J	U	U	U	U	U
WGNA-041124-RW-4940		4940	Bottled Water	04/11/2024	6.65	4.43	2.32	3.58	U	U	U	U	U
WGNA-042324-RW-3743		3743	Sample every three years	04/23/2024	0.384 J	U	U	U	U	U	U	U	U
WGNA-042324-RW-3743-D	Dup	3743	Sample every three years	04/23/2024	0.375 J	U	U	U	U	U	U	U	U
WGNA-042324-RW-4946		4946	Bottled Water	04/23/2024	2.96	6.97	3.72	3.49	U	U	U	U	U
WGNA-042324-RW-4947		4947	Bottled Water	04/23/2024	11.3	4.78	2.78	3.22	U	U	U	U	U
WGNA-042424-RW-4945		4945	Bottled Water	04/24/2024	5.92	5.11	2.71	3.17	U	U	U	U	U
WGNA-050224-RW-0218		218	Sample every three years	05/02/2024	0.534 J	1.05 J	0.58 J	U	U	U	U	U	U
WGNA-050824-RW-4951		4951	Four Consecutive Sampling Events	05/08/2024	6.98	4.53	4.26	2.35	U	U	U	U	U
WGNA-050924-RW-3547		3547	Sample every three years	05/09/2024	U	0.392 J	U	U	U	U	U	U	U
WGNA-051324-RW-4820		4820	Sample every three years	05/13/2024	0.375 J	U	U	U	U	U	U	U	U
WGNA-051324-RW-4952-24-0368A		4952	Bottled Water	05/13/2024	4.5 J	5.15 J	3.23 J	2.71 J	1.12 UJ	0.896 UJ	1.12 UJ	1.12 UJ	1.34 UJ
WGNA-052124-RW-4954		4954	Need Second Sample	05/21/2024	9.9	3.48	3.31	2.13 J	U	U	U	U	U
WGNA-052924-RW-4957		4957	Need Second Sample	05/29/2024	1.71 J	2.59	1.7 J	1.34 J	U	U	U	U	U
WGNA-053024-RW-4955		4955	Bottled Water	05/30/2024	5.64	4.47	2.83	2.73	U	U	U	U	U
WGNA-060524-RW-4958-POST		4958	Rejected Water	06/05/2024	U	U	U	U	U	U	U	U	U
WGNA-060524-RW-4958-POST-D	Dup	4958	Rejected Water	06/05/2024	U	U	U	U	U	U	U	U	U
WGNA-060624-RW-3244		3244	Sample every three years	06/06/2024	U	U	U	U	U	U	U	U	U
WGNA-061324-RW-4953		4953	Four Consecutive Sampling Events	06/13/2024	1.93 J	5.06	2.37	2.56	U	U	U	U	U
WGNA-061924-RW-5015		5015	Bottled Water	06/19/2024	5.98 J	4.89 J	2.34 J	2.97 J	U	U	U	U	U
WGNA-062024-RW-4938		4938	Four Consecutive Sampling Events	06/20/2024	3.35	2.05 J	0.942 J	1.08 J	U	U	U	U	U
WGNA-062024-RW-4956		4956	Bottled Water Offered - No Response	06/20/2024	5.29 J	5.67 J	2.68 J	4.01 J	U	U	U	U	U
WGNA-062624-RW-0227		0227	Sample every three years	06/26/2024	1.48 J	2.37	1.26 J	U	U	U	U	U	U
WGNA-071024-RW-5016		5016	Need Second Sample	07/10/2024	9.99	4.13	2.68	2.38	U	U	U	U	U
WGNA-072324-RW-5017		5017	Bottled Water	07/23/2024	9.21	5.2	3.2	2.82	U	U	U	U	U
WGNA-081524-RW-5018		5018	Bottled Water	08/15/2024	8.51	4.98	2.78	3.4	U	U	U	U	U
WGNA-082024-RW-4958	Pretreatment	4958	Rejected Water	08/20/2024	3.24	5.51	2.94	2.83	U	U	U	U	U
WGNA-091024-RW-0587		0587	Sample every three years	09/10/2024	1.95 J	2.64	0.891 J	1.18 J	U	U	U	U	U
WGNA-091024-RW-0587-D	Dup	0587	Sample every three years	09/10/2024	1.84 J	2.58	0.901 J	1.11 J	U	U	U	U	U

Notes:

Sample did not have detectable PFOA or PFOS.

Result was less than the PADEP MCL.

Result was greater than or equal to the PADEP MCL.

Result was greater than EPA RSL

Data Qualifiers:

J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample, due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit.

U = The analyte was analyzed for, but was not detected, at a level greater than or equal to the level of the adjusted method detection limit for sample and method.

Notes:

* Status based on recent and historical sample results

1 - January 2023 PADEP MCL (Source: https://www.dep.pa.gov/Business/Land/LandRecycling/Standards-Guidance-Procedures/Pages/Statewide-Health-Standards.aspx)

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(Source: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables)

3 - Removal action is taken if results are over the January 2023 PADEP MCL

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NC = No criteria.

ng/L = Nanograms per liter.

PADEP = Pennsylvania Department of Environmental Protection.

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PFBS = Perfluorobutanesulfonic acid.

PFDA = Perfluorodecanoic acid.

PFDoA = Perfluorododecanoic acid.

PFHpA = Perfluoroheptanoic acid.

PFHxA = Perfluorohexanoic acid.

PFHxS = Perfluorohexanesulfonoic acid.

PFNA = Perfluorononanoic acid.

PFOA = Perfluorooctanoic acid.

PFOS = Perfluorooctanesulfonic acid.

PFTeA = Perfluorotetradecanoic acid.

PFTrDA = Perfluorotridecanoic acid.

PFUnA = Perfluoroundecanoic acid.

Table 1: 2024 PFAS Private Well Sampling Results
Former Naval Air Station Joint Reserve Base Willow Grove
Horsham Township, Pennsylvania

Sample Number	Resample/Dup	Location	Status	Sample Date	NMeFOSAA	PFDA	PFDoA	PFHxA	PFTeA	PFTrDA	PFUnA	PFOA	PFOS	PFOA + PFOS
				PADEP MCL:[1,3]	NC	NC	NC	NC	NC	NC	NC	14	18	NC
				EPA RSL:[2]	NC	NC	NC	990	NC	NC	600	4	6	NC
				Units:	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
WGNA-010324-RW-4935		4935	Need Second Sample	01/03/2024	U	U	U	2.3	U	U	U	1.92 J	0.386 J	2.31 J
WGNA-011624-RW-4936		4936	Need Second Sample	01/16/2024	U	U	U	1.93 J	U	U	U	2.48	1.54 J	4.02 J
WGNA-020124-RW-3826		3826	Four Consecutive Sampling Events	02/01/2024	U	U	U	3.4	U	U	U	7.26 J+	4.35	11.6
WGNA-020124-RW-3930		3930	Sample every three years	02/01/2024	U	U	U	U	U	U	U	U	U	0
WGNA-020124-RW-3930-D	Dup	3930	Sample every three years	02/01/2024	U	U	U	U	U	U	U	U	U	0
WGNA-020124-RW-4805		4805	Four Consecutive Sampling Events	02/01/2024	U	U	U	3.62	U	U	U	8.42 J+	2.69	11.1
WGNA-020624-RW-3370		3370	Sample every three years	02/06/2024	U	U	U	2.51	U	U	U	5.4	3.98	9.38
WGNA-021424-RW-0629		0629	Four Consecutive Sampling Events	02/14/2024	U	0.436 J	U	3.15	U	U	U	7.48	5.58	13.1
WGNA-021424-RW-3241		3241	Sample every three years	02/14/2024	U	U	U	U	U	U	U	0.822 J	0.733 J	1.56
WGNA-021524-RW-0131		0131	Sample every three years	02/15/2024	U	U	U	2.22	U	U	U	3.56	1.41 J	4.97
WGNA-021524-RW-0936		0936	Sample every three years	02/15/2024	U	U	U	4.51	U	U	U	3.22	1.52 J	4.74
WGNA-022124-RW-3526		3526	Four Consecutive Sampling Events	02/21/2024	U	U	U	3.59	U	U	U	7.71	6.46	14.2
WGNA-022124-RW-3601		3601	Four Consecutive Sampling Events	02/21/2024	U	U	U	2.96	U	U	U	7.07	2.4	9.47
WGNA-022724-RW-3782		3782	Sample every three years	02/27/2024	U	U	U	4.72	U	U	U	7.42	1.63 J	9.05
WGNA-022724-RW-3782-D	Dup	3782	Sample every three years	02/27/2024	U	U	U	4.51	U	U	U	7.43	1.59 J	9.02
WGNA-022724-RW-4799		4799	Sample every three years	02/27/2024	U	U	U	U	U	U	U	U	U	0
WGNA-022824-RW-3358		3358	Sample every three years	02/28/2024	U	U	U	U	U	U	U	U	U	0
WGNA-022824-RW-4938		4938	Four Consecutive Sampling Events	02/28/2024	U	U	U	3.91	U	U	U	5.87	3.54	9.41
WGNA-022924-RW-3352		3352	Sample every three years	02/29/2024	U	U	U	U	U	U	U	0.573 J	U	0.573 J
WGNA-030524-RW-3334		3334	Sample every three years	03/05/2024	U	U	U	U	U	U	U	U	U	0
WGNA-030624-RW-4837		4837	Sample every three years	03/06/2024	U	U	U	U	U	U	U	U	U	0
WGNA-030724-RW-3451		3451	Sample every three years	03/07/2024	U	U	U	U	U	U	U	U	U	0
WGNA-030724-RW-3752		3752	Four Consecutive Sampling Events	03/07/2024	U	0.361 J	U	4.68	U	U	U	9.09	7.02	16.1
WGNA-031324-RW-3442		3442	Bottled Water	03/13/2024	U	0.414 J	U	7.88	U	U	U	17.2	9.97	27.2
WGNA-031324-RW-3442-D	Dup	3442	Bottled Water	03/13/2024	U	0.412 J	U	8.48	U	U	U	18.1	11.2	29.3
WGNA-031924-RW-0692		0692	Sample every three years	03/19/2024	U	U	U	1.07 J	U	U	U	0.697 J	U	0.697 J
WGNA-040324-RW-3455		3455	Bottled Water	04/03/2024	U	U	U	6.85	U	U	U	18.3	9.4	27.7
WGNA-040324-RW-4939		4939	Need Second Sample	04/03/2024	U	U	U	5.37	U	U	U	7.74	4.62	12.4
WGNA-040324-RW-4941		4941	Need Second Sample	04/03/2024	U	U	U	3.31	U	U	U	3.71	0.886 J	4.6
WGNA-041024-RW-4863		4863	Sample every three years	04/10/2024	U	U	U	13.1	U	U	U	2.89	0.513 J	3.4
WGNA-041124-RW-3511		3511	Connection Offered - Bottled Water	04/11/2024	U	U	U	7.54	U	U	U	14.8	7.7	22.5
WGNA-041124-RW-4940		4940	Bottled Water	04/11/2024	U	0.496 J	U	5.61	U	U	U	14.2	10.5	24.7
WGNA-042324-RW-3743		3743	Sample every three years	04/23/2024	U	U	U	U	U	U	U	0.861 J	0.456 J	1.32
WGNA-042324-RW-3743-D	Dup	3743	Sample every three years	04/23/2024	U	U	U	U	U	U	U	0.781 J	0.416 J	1.2
WGNA-042324-RW-4946		4946	Bottled Water	04/23/2024	U	0.657 J	U	10.2	U	U	U	16.7	12	28.7
WGNA-042324-RW-4947		4947	Bottled Water	04/23/2024	U	0.339 J	U	6.06	U	U	U	17.3	9.53	26.8
WGNA-042424-RW-4945		4945	Bottled Water	04/24/2024	U	0.473 J	U	6.57	U	U	U	15.7	10.1	25.8
WGNA-050224-RW-0218		218	Sample every three years	05/02/2024	U	U	U	1.58 J	U	U	U	3.92	1.05 J	4.97
WGNA-050824-RW-4951		4951	Four Consecutive Sampling Events	05/08/2024	U	U	U	4.03	U	U	U	12.8	8.42	21.2
WGNA-050924-RW-3547		3547	Sample every three years	05/09/2024	U	U	U	U	U	U	U	U	U	0
WGNA-051324-RW-4820		4820	Sample every three years	05/13/2024	U	U	U	U	U	U	U	0.901 J	U	0.901 J
WGNA-051324-RW-4952-24-0368A		4952	Bottled Water	05/13/2024	1.12 UJ	1.12 UJ	1.12 UJ	3.57 J	1.12 UJ	1.12 UJ	1.12 UJ	15.8 J	10.5 J	26.3 J
WGNA-052124-RW-4954		4954	Need Second Sample	05/21/2024	U	U	U	4.16	U	U	U	12	6.91	18.9
WGNA-052924-RW-4957		4957	Need Second Sample	05/29/2024	U	U	U	3.79	U	U	U	7.37	4.64	12
WGNA-053024-RW-4955		4955	Bottled Water	05/30/2024	U	0.365 J	U	5.38	U	U	U	14.2	9.45	23.7
WGNA-060524-RW-4958-POST		4958	Rejected Water	06/05/2024	U	U	U	U	U	U	U	U	U	0
WGNA-060524-RW-4958-POST-D	Dup	4958	Rejected Water	06/05/2024	U	U	U	U	U	U	U	U	U	0
WGNA-060624-RW-3244		3244	Sample every three years	06/06/2024	U	U	U	U	U	U	U	U	U	0
WGNA-061324-RW-4953		4953	Four Consecutive Sampling Events	06/13/2024	U	0.449 J	U	7.49	U	U	U	13.7	7.9	21.6
WGNA-061924-RW-5015		5015	Bottled Water	06/19/2024	U	U	U	6.4 J	U	U	U	14.8 J	9.04 J	23.8 J
WGNA-062024-RW-4938		4938	Four Consecutive Sampling Events	06/20/2024	U	0.366 J	U	3.71	U	U	U	5.83	4.23	10.1
WGNA-062024-RW-4956		4956	Bottled Water Offered - No Response	06/20/2024	U	0.691 J	U	6.6 J	U	U	U	16.5 J	13.4 J	29.9 J
WGNA-062624-RW-0227		0227	Sample every three years	06/26/2024	U	U	U	5.92	U	U	U	6.11	1.65 J	7.76
WGNA-071024-RW-5016		5016	Need Second Sample	07/10/2024	U	U	U	5.52	U	U	U	13.5	7.91	21.4
WGNA-072324-RW-5017		5017	Bottled Water	07/23/2024	U	0.325 J	U	6.9	U	U	U	16	9.92	25.9
WGNA-081524-RW-5018		5018	Bottled Water	08/15/2024	U	0.457 J	U	6.52	U	U	U	16	9.98	26
WGNA-082024-RW-4958	Pretreatment	4958	Rejected Water	08/20/2024	U	0.374 J	U	8.82	U	U	U	14.9	8.46	23.4
WGNA-091024-RW-0587		0587	Sample every three years	09/10/2024	U	U	U	5.03	U	U	U	7.22	4.25	11.5
WGNA-091024-RW-0587-D	Dup	0587	Sample every three years	09/10/2024	U	U	U	4.8	U	U	U	7.22	3.64	10.9

Notes:
Sample did not have detectable PFOA or PFOS.
Result was less than the PADEP MCL.
Result was greater than or equal to the PADEP MCL.
Result was greater than EPA RSL

Data Qualifiers:
J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample, due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit.
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Notes:
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(Source: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables)
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D = Duplicate.
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PFUnA = Perfluoroundecanoic acid.

ATTACHMENT 1

May 2023 Decision Rules

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May 2023 Decision Rules from
Field Task Modification Request Forms 2 (September 2021) and 3 (October 2022)
Former Naval Air Station Joint Reserve Base Willow Grove
Horsham Township, Pennsylvania
and
Former Naval Air Warfare Center Warminster
Warminster, Pennsylvania

Decision Rule #1:

If the Navy receives a request to sample a new location within the sampling area, a location outside of the sampling area is approved by the Navy, or the Navy determines an additional sample is necessary at an existing location, then collect a drinking water sample and proceed to Decision Rule #2.

Decision Rule #2:

If the measured PFOA or PFOS concentration in the drinking water sample exceeds the PALs (Worksheet #15), then provide an alternate source of drinking water for the affected residence(s) and remove the corresponding sampling location from the sampling program; otherwise, collect a second sample and proceed to Decision Rule #3.

Decision Rule #3:

If the PFOA or PFOS concentration in the second sample exceeds the PALs, then provide an alternate source of drinking water for the affected residence(s) and remove the corresponding sampling location from the sampling program; otherwise, proceed to Decision Rule #4.

Decision Rule #4:

If PFOA and PFOS concentrations in drinking water sample are less than their respective PALs, but the measured concentration of PFBA, PFBS, PFHxA, PFHxS, PFNA, or HFPO-DA is greater than the respective PAL for two sampling events, then convene the Project Team. Project Team will review recent toxicity data to determine whether the analyte concentration is likely to be a concern. If so, the team will develop DQOs for evaluating concerns and may provide an alternate source of drinking water; otherwise, monitor location annually and proceed to Decision Rule #5.

Decision Rule #5:

If a location is expected to exceed the combined concentration of PFOA and PFOS of 70 ng/L based on judgment by the Project Team (Navy/EPA/PADEP) due to proximity to other locations where the combined PFOA and PFOS concentration is greater than or equal to 70 ng/L, then the Navy will provide an alternate source of drinking water for the affected residence(s) and remove the corresponding sampling location from the sampling program; otherwise, proceed to Decision Rule #6.

Decision Rule #6:

If a location exceeds 50 percent of the PFOA or PFOS PALs or based on judgment by the Project Team (Navy/EPA/PADEP) due to proximity to other locations that exceed the PFOA or PFOS PALs, then affected residence(s) will be sampled quarterly for four consecutive sampling events. If the results exceed the PALs at any time, then provide an alternate source of drinking water for the affected residence(s) and remove the corresponding sampling location from the sampling program; otherwise sample annually. Proceed to Decision Rule #7.

Decision Rule #7:

If it has been three or more years since the last sampling event for a property with previous sampling results below the PALs that is not connected to the municipal water supply, collect one sample and proceed to Decision Rule #3.

ATTACHMENT 2

Laboratory Analytical Data Packages and
Validated Analytical Data Reports

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