



PHIL-27824

August 24, 2023

Project Number 08005-WE04

Mr. Thomas Magge
Clean Water Environmental Program Manager
Pennsylvania Department of Environmental Protection
Southeast Regional Office
2 East Main Street
Norristown, Pennsylvania 19401

Reference: Contract No. N6247016D9008
Contract Task Order No. WE04

Subject: Temporary Discharge Monitoring Report - July 1 to July 31, 2023
Hangar 680 Per- and Polyfluoroalkyl Substances Pilot Test System
Former Naval Air Station Joint Reserve Base Willow Grove
Horsham Township, Pennsylvania

Dear Mr. Magge:

On behalf of the United States (U.S.) Navy, Tetra Tech is pleased to submit the Temporary Discharge Monitoring Report (DMR) for the Hangar 680 per- and polyfluoroalkyl substances (PFAS) pilot test system at the Former Naval Air Station Joint Reserve Base Willow Grove in Horsham Township, Pennsylvania. This DMR includes available influent, effluent, and field quality assurance/quality control (QA/QC) results for sampling from July 1 to July 31, 2023.

The temporary discharge was first approved by the Pennsylvania Department of Environmental Protection (PADEP) on February 10, 2020, as requested by the U.S. Navy under a Federal Facility Agreement permit equivalency. PADEP approved subsequent modifications to the permit equivalency in letters dated August 5, 2020, January 27, 2021, July 23, 2021, January 13, 2022, July 1, 2022 (modified on August 12, 2022), and December 28, 2022. PADEP approved a request to extend the permit equivalency duration for 180 more days on June 14, 2023. In addition to previous sampled parameters, Navy began sampling for perfluorobutanoic acid (PFBA) on June 26, 2023.

Full-time operation of the Hangar 680 PFAS pilot test system was initiated on March 2, 2020. A total of 32,116,868 gallons of water have been treated and discharged to Outfall 8 as of July 31, 2023. The discharge for the reporting period complied with the effluent limitations and monitoring requirements as summarized in the following bullets:

- Influent samples were collected on July 5, 12, 17, and July 31, 2023. These samples were collected from first intermediate extraction well HA-EW-1I, second intermediate extraction well HA-EW-2I, and the combined influent of these extraction wells. They were not collected from shallow extraction well HA-EW-1S due to pump and variable frequency drive (VFD) malfunctions. A new pump was installed in mid-July 2023 and a new VFD has been ordered. It is anticipated that the new VFD be installed and programmed in September 2023. These samples were analyzed for PFAS, specifically PFOA and PFOS, and the results are provided in Table 1. During this reporting period, the shallow extraction well HA-EW-1S was not operated, the first intermediate extraction well HA-EW-1I was operated at approximately 7.8 gallons per minute (gpm), and the second intermediate extraction well HA-EW-2I was operated at approximately 9.4 gpm.

- Effluent samples were collected on July 5, 12, 17, and July 31, 2023. These samples were analyzed for PFOA and PFOS. Effluent samples for tetrachloroethene (PCE), trichloroethene (TCE), carbon tetrachloride (CTC), 1,2-dichloroethane (1,2-DCA), and total lead also were collected on July 17, 2023. All effluent analytical sample results for this reporting period are provided in Table 2. Field blank QA/QC samples were collected on July 5, 12, 17, and July 31, 2023. These samples were analyzed for PFOA and PFOS, and their analytical results are provided in Table 2.
- Trip blank QA/QC samples were collected on July 17, 2023. These samples were analyzed for PCE, TCE, CTC, and 1,2-DCA. The results are provided in Table 2.
- Per the June 14, 2023 permit equivalency extension, biweekly monitoring of PFOA and PFOS shall be conducted at discharge sampling port HA-Mid2IX to determine if maintenance actions are needed. During this reporting period, all PFOA and PFOS sampling results at HA-Mid2IX were below the maintenance levels described in the permit equivalency modification (0.014 µg/L PFOA and 0.018 µg/L PFOS). Therefore, no maintenance actions based on this requirement were deemed necessary before the next reporting period.

The Aqueous IDW treatment system was not operated during this reporting period, and therefore there are no discharge results to report.

Lastly, analytical results from samples collected since the start of the Hangar 680 PFAS pilot test system and intermittent operation of the aqueous IDW treatment system have demonstrated that both systems continue to effectively reduce the compounds identified in the permit equivalency to below the established limits.

Please do not hesitate to contact me if you have any questions.

Sincerely,



Rocco Mercuri, PG
Senior Project Manager

RM/nfs

Attachments:

Table 1 – NPDES Permit Equivalency Influent Sample Results from July 1, 2023 through July 31, 2023
Table 2 – NPDES Permit Equivalency Effluent Sample Results from July 1, 2023 through July 31, 2023

c: Brian Helland (Navy BRAC PMOE)
Dawn DeFreitas (Navy BRAC PMOE)
Jon Harris (Navy BRAC PMOE)
Colin Wade (PADEP)
Sarah Kloss (EPA Region 3)
Navy Caretaker Office
Horsham Library
NIRIS RDM

TABLES

**Table 1: NPDES Permit Equivalency Influent Sample Results from July 1, 2023 through July 31, 2023
Hangar 680 PFAS Pilot Test
Former Naval Air Station Joint Reserve Base Willow Grove**

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		175			
Sample ID		--	HA-EW-11-20230705	HA-EW-21-20230705	HA-CombinedINF-20230705
Sample Date		--	7/5/2023	7/5/2023	7/5/2023
Units		µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	--	2.300 D	2.810 D	2.160 D
Perfluorooctanesulfonic acid (PFOS)	NA	--	14.000 D	65.700 D	42.600 D
PFOA + PFOS	0.07	--	16.300	68.510	44.760

Notes:

⁽¹⁾: Maximum effluent limits per PADEP Temporary Discharge Request - Extension (June 14, 2023).

Bold value indicates result is above applicable maximum effluent limit.

PADEP: Pennsylvania Department of Environmental Protection.

µg/L: Micrograms per liter (also referred to as parts per billion [ppb]).

NA: Not applicable.

--: Not sampled.

D: Dilution Run. Initial run outside the initial calibration range of the instrument.

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		176			
Sample ID		--	HA-EW-11-20230712	HA-EW-21-20230712	HA-CombinedINF-20230712
Sample Date		--	7/12/2023	7/12/2023	7/12/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	--	2.060 D	2.310 D	2.040 D
Perfluorooctanesulfonic acid (PFOS)	NA	--	9.810 D	62.500 D	35.300 D
PFOA + PFOS	0.07	--	11.870	64.810	37.340

Notes:

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Hangar 680 PFAS Pilot Test
Former Naval Air Station Joint Reserve Base Willow Grove**

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		177			
Sample ID		--	HA-EW-11-20230717	HA-EW-21-20230717	HA-CombinedINF-20230717
Sample Date		--	7/17/2023	7/17/2023	7/17/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	--	2.510 D	3.270 D	2.510 D
Perfluorooctanesulfonic acid (PFOS)	NA	--	13.400 D	82.100 D	13.400 D
PFOA + PFOS	0.07	--	15.910	85.370	15.910

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Hangar 680 PFAS Pilot Test
Former Naval Air Station Joint Reserve Base Willow Grove**

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample			
		Shallow Influent	Intermediate Influent	Intermediate Influent 2	Combined Influent
Operation Week		178			
Sample ID		--	HA-EW-11-20230731	HA-EW-21-20230731	HA-CombinedINF-20230731
Sample Date		--	7/31/2023	7/31/2023	7/31/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	--	2.390 D	2.660 D	2.370 D
Perfluorooctanesulfonic acid (PFOS)	NA	--	16.100 D	63.900 D	58.700 D
PFOA + PFOS	0.07	--	18.490	66.560	61.070

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--: Not sampled.

D: Dilution Run. Initial run outside the initial calibration range of the instrument.

**Table 2: NPDES Permit Equivalency Effluent Sample Results from July 1, 2023 through July 31, 2023
Hangar 680 PFAS Pilot Test
Former Naval Air Station Joint Reserve Base Willow Grove**

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		175		
Sample ID		HA-GEFF-20230705	HA-DUP-177-20230705	HA-FB-20230705
Sample Date		7/5/2023	7/5/2023	7/5/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00239 U	0.00236 U	0.00250 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00239 U	0.00236 U	0.00250 U
PFOA + PFOS	0.07	ND	ND	ND

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		175		
Sample ID		HA-GEFF-20230705	HA-DUP-177-20230705	--
Sample Date		7/5/2023	7/5/2023	7/5/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)	0.69	--	--	--
Trichloroethylene (TCE)	2.5	--	--	--
Carbon Tetrachloride	0.23	--	--	--
1,2-Dichloroethane	0.38	--	--	--
Lead (total)	3.2	--	--	--

Notes:

⁽¹⁾: Maximum effluent limits per PADEP Temporary Discharge Request - Extension (June 14, 2023).

Effluent and effluent field duplicate results have not yet been validated.

Bold value indicates result is above applicable maximum effluent limit.

Quality assurance/quality control sample (field blank and trip blank) results are not validated.

PADEP: Pennsylvania Department of Environmental Protection

µg/L: Micrograms per liter (also referred to parts per billion [ppb]).

NA: Not applicable.

U: Analyte not detected (lab qualifier). Value reported to limit of detection.

ND: Not detected.

J: Estimated (lab qualifier). The analyte was positively identified; the quantitation is an estimation.

--: Not sampled.

**Table 2: NPDES Permit Equivalency Effluent Sample Results from July 1, 2023 through July 31, 2023
Hangar 680 PFAS Pilot Test
Former Naval Air Station Joint Reserve Base Willow Grove**

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		176		
Sample ID		HA-GEFF-20230712	HA-DUP-178-20230712	HA-FB-20230712
Sample Date		7/12/2023	7/12/2023	7/12/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00219 U	0.00216 U	0.00243 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00219 U	0.00216 U	0.00243 U
PFOA + PFOS	0.07	ND	ND	ND

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		176		
Sample ID		HA-GEFF-20230712	HA-DUP-178-20230712	--
Sample Date		7/12/2023	7/12/2023	7/12/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)	0.69	--	--	--
Trichloroethylene (TCE)	2.5	--	--	--
Carbon Tetrachloride	0.23	--	--	--
1,2-Dichloroethane	0.38	--	--	--
Lead (total)	3.2	--	--	--

Notes:

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Hangar 680 PFAS Pilot Test
Former Naval Air Station Joint Reserve Base Willow Grove**

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		177		
Sample ID		HA-GEFF-20230717	HA-DUP-179-20230717	HA-FB-20230717
Sample Date		7/17/2023	7/17/2023	7/17/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00226 U	0.00240 U	0.00253 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00226 U	0.00240 U	0.00253 U
PFOA + PFOS	0.07	ND	ND	ND

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		177		
Sample ID		HA-GEFF-20230717	HA-DUP-179-20230717	HA-TB-20230717
Sample Date		7/17/2023	7/17/2023	7/17/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)	0.69	0.20 U	0.20 U	0.20 U
Trichloroethylene (TCE)	2.5	0.20 U	0.20 U	0.20 U
Carbon Tetrachloride	0.23	0.09 J	0.09 J	0.20 U
1,2-Dichloroethane	0.38	0.20 U	0.20 U	0.20 U
Lead (total)	3.2	0.70 U	0.70 U	--

Notes:

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Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Field Blank
Operation Week		178		
Sample ID		HA-GEFF-20230731	HA-DUP-180-20230731	HA-FB-20230731
Sample Date		7/31/2023	7/31/2023	7/31/2023
Units		µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.00227 U	0.00230 U	0.00248 U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00227 U	0.00230 U	0.00248 U
PFOA + PFOS	0.07	ND	ND	ND

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample		
		Effluent	Effluent Field Duplicate	Trip Blank
Operation Week		178		
Sample ID		HA-GEFF-20230731	HA-DUP-180-20230731	--
Sample Date		7/31/2023	7/31/2023	7/31/2023
Units		µg/L	µg/L	µg/L
Tetrachloroethylene (PCE)	0.69	--	--	--
Trichloroethylene (TCE)	2.5	--	--	--
Carbon Tetrachloride	0.23	--	--	--
1,2-Dichloroethane	0.38	--	--	--
Lead (total)	3.2	--	--	--

Notes:

⁽¹⁾: Maximum effluent limits per PADEP Temporary Discharge Request - Extension (June 14, 2023).

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