



PHIL-27802

July 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 - June 1 to June 30, 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 June 1 to June 30, 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 31,485,040 gallons of water have been treated and discharged to Outfall 8 as of June 26, 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 June 5 and June 26, 2023. These samples were collected from shallow extraction well HA-EW-1S (only on June 5, 2023, not on June 26, 2023 due to a pump malfunction that day), first intermediate extraction well HA-EW-1I, second intermediate extraction well HA-EW-2I, and the combined influent of these extraction wells. 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 operated at approximately 3.9 gallons per minute (gpm), the first intermediate extraction well HA-EW-1I was operated at approximately 6.9 gpm, and the second intermediate extraction well HA-EW-2I was operated at approximately 6.4 gpm.



- Effluent samples were collected on June 5 and June 26, 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 June 5 and June 26, 2023. All effluent analytical sample results for this reporting period are provided in Table 2. Field blank QA/QC samples were collected on June 5 and June 26, 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 June 5 and June 26, 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. However, despite these levels not being exceeded, the Navy voluntarily conducted change out of the LeadGAC, LagGAC, LeadIX, and Mid1IX media from June 13 to June 15, 2023. In addition, the four ion exchange vessels were positionally switched to the configuration indicated per the table below. The reason for the positional swaps is to prolong the life of the new ion exchange resin and maximize efficiency. The system was turned off during media change out activities, and upon restart, unfortunately only two of the three extraction wells were able to be successfully turned back on. A pump malfunction related to EW-1S occurred during the restart of the system and is currently being investigated and resolved. Therefore, the overall discharge amount for the June reporting period was lower than previous reporting periods due to the system shutdown.

Old IX Vessel Location within Treatment Train	New IX Vessel Location within Treatment Train
LagIX	LeadIX
Mid2IX	Mid1IX
Mid1IX	Mid2IX (Loaded with New IX Resin)
LeadIX	LagIX (Loaded with New IX Resin)

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 June 1, 2023 through June 30, 2023
 Table 2 – NPDES Permit Equivalency Effluent Sample Results from June 1, 2023 through June 30, 2023



- c: Brian Helland (Navy BRAC PMOE)
- Dawn DeFreitas (Navy BRAC PMOE)
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- 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 June 1, 2023 through June 30, 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		171			
Sample ID		HA-EW-1S-20230605	HA-EW-1I-20230605	HA-EW-2I-20230605	HA-CombinedINF-20230605
Sample Date		6/5/2023	6/5/2023	6/5/2023	6/5/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	0.698	2.580 D	2.900 D	2.400 D
Perfluorooctanesulfonic acid (PFOS)	NA	67.500 D	14.900 D	77.900 D	47.900 D
PFOA + PFOS	0.07	68.198	17.480	80.800	50.300

Notes:

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

Results from the shallow (HA-EW-1S), first intermediate (HA-EW-1I), second intermediate (HA-EW-2I), and combined (HA-CombinedINF) influent locations are not validated.

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.

**Table 1: NPDES Permit Equivalency Influent Sample Results from June 1, 2023 through June 30, 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		174			
Sample ID		--	HA-EW-1I-20230626	HA-EW-2I-20230626	HA-CombinedINF-20230626
Sample Date		--	6/26/2023	6/26/2023	6/26/2023
Units	µg/L	µg/L	µg/L	µg/L	µg/L
Perfluorooctanoic acid (PFOA)	NA	--	2.880 D	3.170 D	3.040 D
Perfluorooctanesulfonic acid (PFOS)	NA	--	13.700 D	74.900 D	50.500 D
PFOA + PFOS	0.07	--	16.580	78.070	53.540

Notes:

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

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NA: Not applicable.

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

**Table 2: NPDES Permit Equivalency Effluent Sample Results from June 1, 2023 through June 30, 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		171					
Sample ID		HA-GEFF-20230605		HA-DUP-175-20230605		HA-FB-20230605	
Sample Date		6/5/2023		6/5/2023		6/5/2023	
Units		µg/L		µg/L		µg/L	
Perfluorooctanoic acid (PFOA)	NA	0.00231	U	0.00245	U	0.00257	U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00231	U	0.00245	U	0.00257	U
PFOA + PFOS	0.07	ND		ND		ND	

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample					
		Effluent		Effluent Field Duplicate		Trip Blank	
Operation Week		171					
Sample ID		HA-GEFF-20230605		HA-DUP-175-20230605		HA-TB-20230605	
Sample Date		6/5/2023		6/5/2023		6/5/2023	
Units		µg/L		µg/L		µg/L	
Tetrachloroethylene (PCE)	0.69	0.20	U	0.2	U	0.2	U
Trichloroethylene (TCE)	2.5	0.20	U	0.2	U	0.2	U
Carbon Tetrachloride	0.23	0.10	J	0.098	J	0.2	U
1,2-Dichloroethane	0.38	0.20	U	0.2	U	0.2	U
Lead (total)	3.2	0.70	U	0.70	U	--	

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.

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Operation Week		174					
Sample ID		HA-GEFF-20230626		HA-DUP-176-20230626		HA-FB-20230626	
Sample Date		6/26/2023		6/26/2023		6/26/2023	
Units		µg/L		µg/L		µg/L	
Perfluorooctanoic acid (PFOA)	NA	0.00222	U	0.00222	U	0.00255	U
Perfluorooctanesulfonic acid (PFOS)	NA	0.00222	U	0.00222	U	0.00255	U
PFOA + PFOS	0.07	ND		ND		ND	

Parameter	Maximum Effluent Limit ⁽¹⁾	Sample					
		Effluent		Effluent Field Duplicate		Trip Blank	
Operation Week		174					
Sample ID		HA-GEFF-20230626		HA-DUP-176-20230626		HA-TB-20230626	
Sample Date		6/26/2023		6/26/2023		6/26/2023	
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	0.11	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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Effluent and effluent field duplicate results have not yet been validated.

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