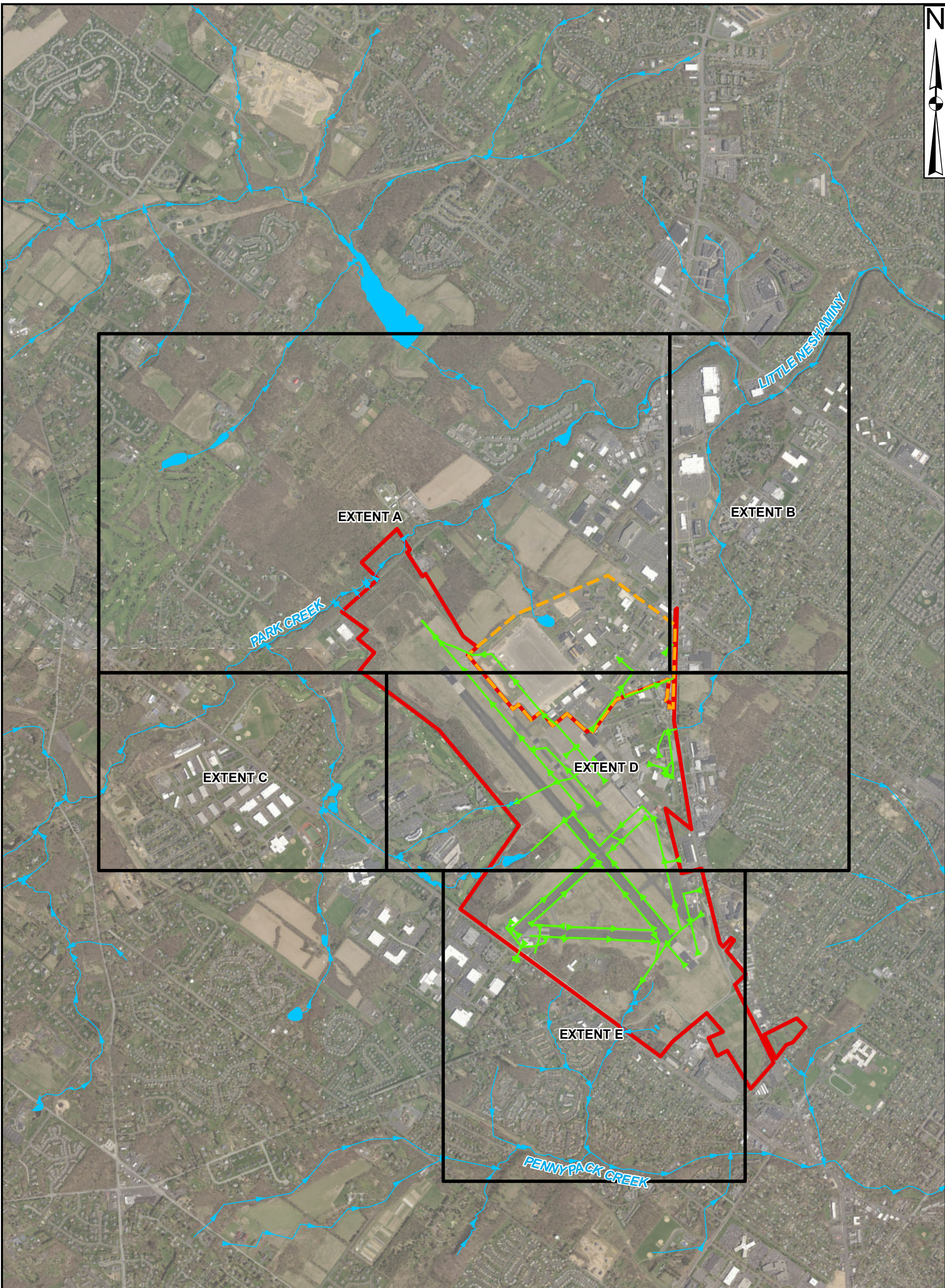




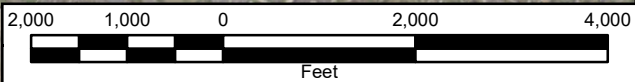


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LEGEND

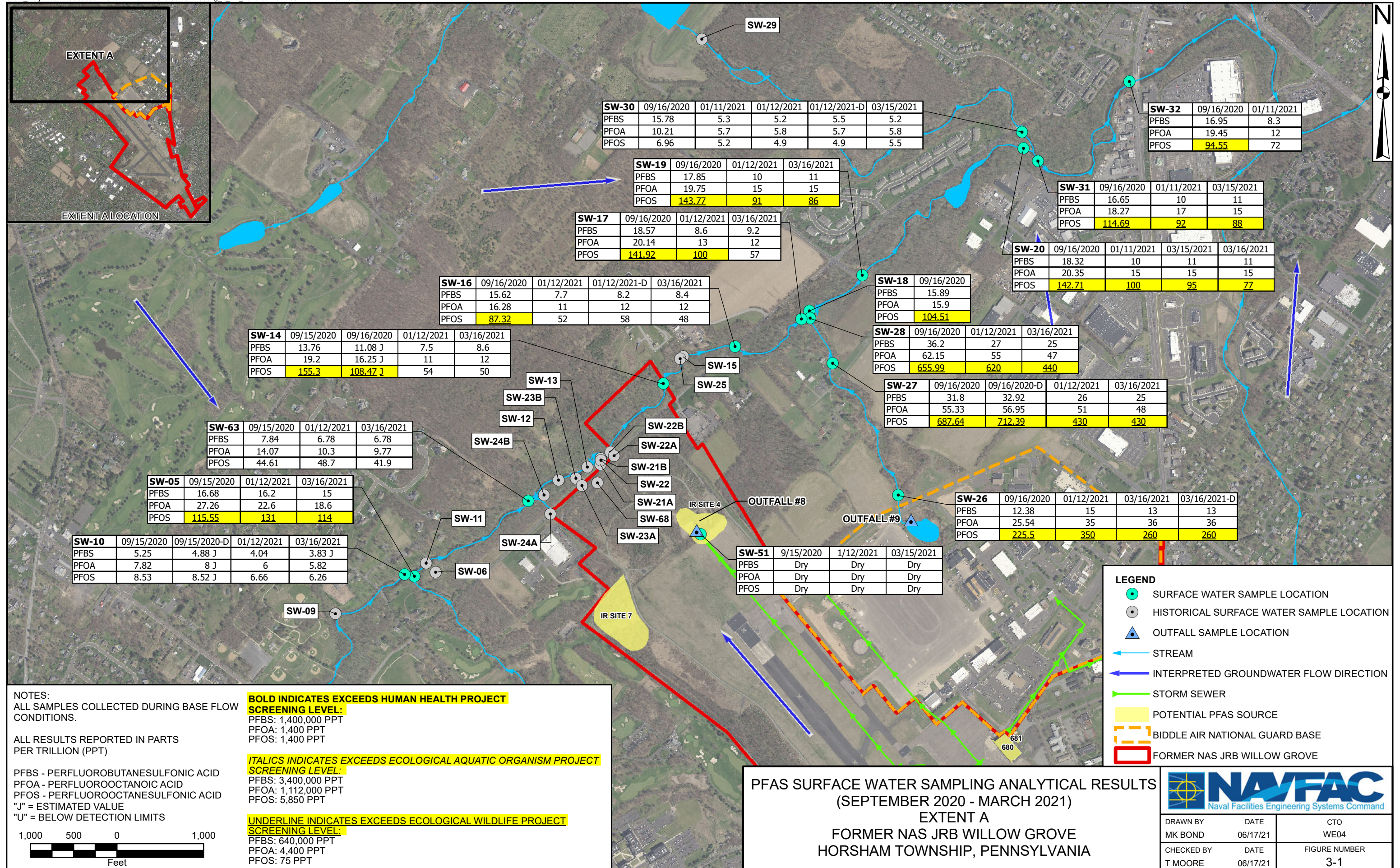
-  STREAM
-  STORM SEWER
-  BIDDLE AIR NATIONAL GUARD BASE
-  FORMER NAS JRB WILLOW GROVE



SURFACE WATER SAMPLING AREA EXTENT
LOCATION MAP
FORMER NAS JRB WILLOW GROVE
HORSHAM TOWNSHIP, PENNSYLVANIA



DRAWN BY MK BOND	DATE 05/11/21	CTO WE04
CHECKED BY T MOORE	DATE 05/11/21	FIGURE NUMBER 2-1



NOTES:
 ALL SAMPLES COLLECTED DURING BASE FLOW CONDITIONS.
 ALL RESULTS REPORTED IN PARTS PER TRILLION (PPT)
 PFBS - PERFLUOROBUTANESULFONIC ACID
 PFOA - PERFLUOROOCCTANOIC ACID
 PFOS - PERFLUOROOCCTANESULFONIC ACID
 "J" = ESTIMATED VALUE
 "U" = BELOW DETECTION LIMITS

BOLD INDICATES EXCEEDS HUMAN HEALTH PROJECT SCREENING LEVEL:
 PFBS: 1,400,000 PPT
 PFOA: 1,400 PPT
 PFOS: 1,400 PPT

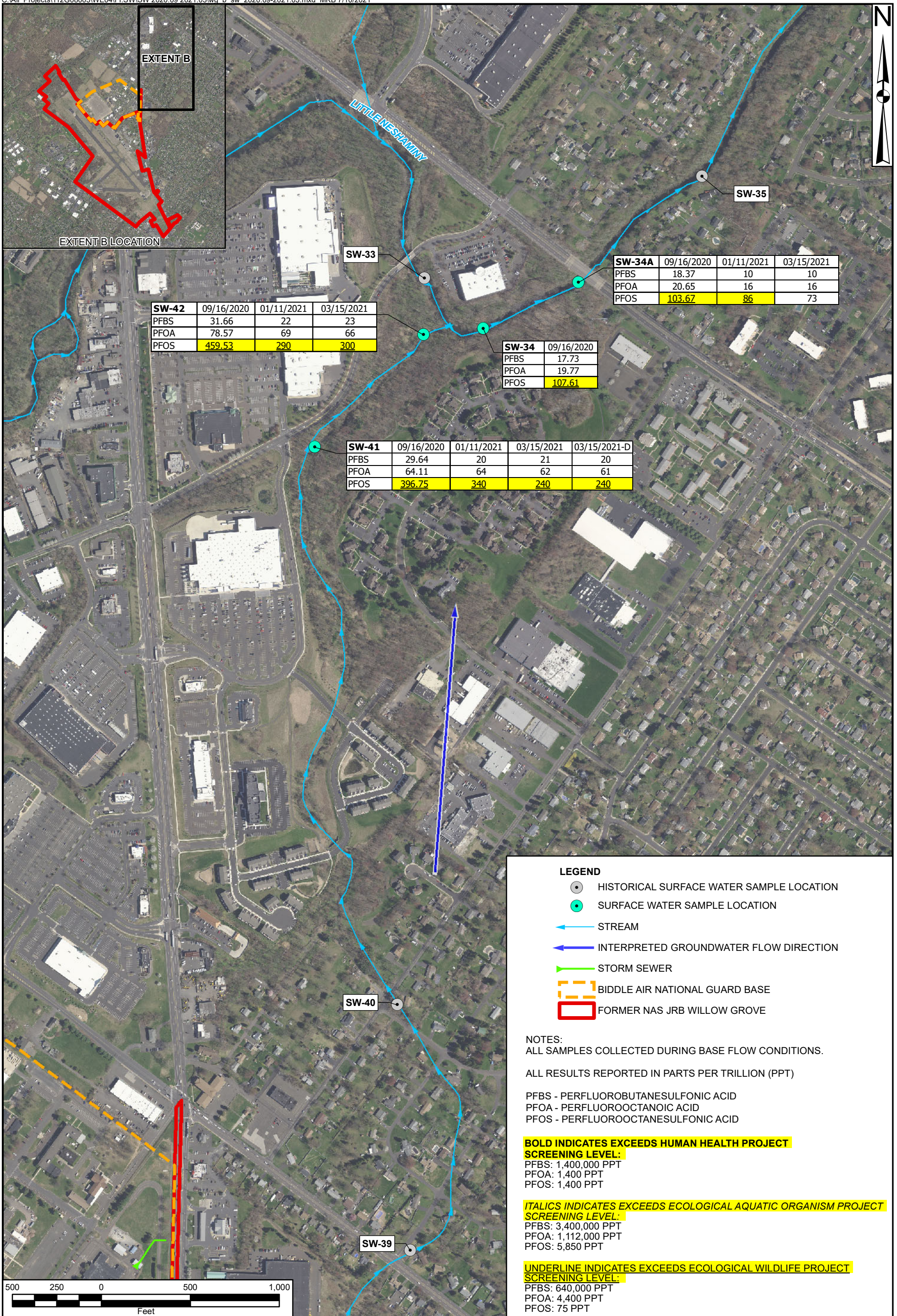
ITALICS INDICATES EXCEEDS ECOLOGICAL AQUATIC ORGANISM PROJECT SCREENING LEVEL:
 PFBS: 3,400,000 PPT
 PFOA: 1,112,000 PPT
 PFOS: 5,850 PPT

UNDERLINE INDICATES EXCEEDS ECOLOGICAL WILDLIFE PROJECT SCREENING LEVEL:
 PFBS: 640,000 PPT
 PFOA: 4,400 PPT
 PFOS: 75 PPT

**PFAS SURFACE WATER SAMPLING ANALYTICAL RESULTS
 (SEPTEMBER 2020 - MARCH 2021)
 EXTENT A
 FORMER NAS JRB WILLOW GROVE
 HORSHAM TOWNSHIP, PENNSYLVANIA**

NAVFAC
 Naval Facilities Engineering Systems Command

DRAWN BY	DATE	CTO
MK BOND	06/17/21	WE04
CHECKED BY	DATE	FIGURE NUMBER
T MOORE	06/17/21	3-1



SW-42	09/16/2020	01/11/2021	03/15/2021
PFBS	31.66	22	23
PFOA	78.57	69	66
PFOS	<u>459.53</u>	<u>290</u>	<u>300</u>

SW-34	09/16/2020
PFBS	17.73
PFOA	19.77
PFOS	<u>107.61</u>

SW-34A	09/16/2020	01/11/2021	03/15/2021
PFBS	18.37	10	10
PFOA	20.65	16	16
PFOS	<u>103.67</u>	<u>86</u>	73

SW-41	09/16/2020	01/11/2021	03/15/2021	03/15/2021-D
PFBS	29.64	20	21	20
PFOA	64.11	64	62	61
PFOS	<u>396.75</u>	<u>340</u>	<u>240</u>	<u>240</u>

LEGEND

- HISTORICAL SURFACE WATER SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- ← STREAM
- ← INTERPRETED GROUNDWATER FLOW DIRECTION
- STORM SEWER
- ▭ BIDDLE AIR NATIONAL GUARD BASE
- ▭ FORMER NAS JRB WILLOW GROVE

NOTES:
ALL SAMPLES COLLECTED DURING BASE FLOW CONDITIONS.

ALL RESULTS REPORTED IN PARTS PER TRILLION (PPT)

PFBS - PERFLUOROBUTANESULFONIC ACID
PFOA - PERFLUOROOCCTANOIC ACID
PFOS - PERFLUOROOCCTANESULFONIC ACID

BOLD INDICATES EXCEEDS HUMAN HEALTH PROJECT

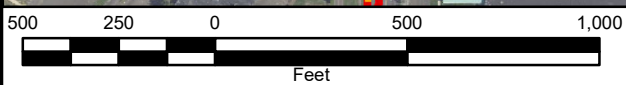
SCREENING LEVEL:
PFBS: 1,400,000 PPT
PFOA: 1,400 PPT
PFOS: 1,400 PPT

ITALICS INDICATES EXCEEDS ECOLOGICAL AQUATIC ORGANISM PROJECT

SCREENING LEVEL:
PFBS: 3,400,000 PPT
PFOA: 1,112,000 PPT
PFOS: 5,850 PPT

UNDERLINE INDICATES EXCEEDS ECOLOGICAL WILDLIFE PROJECT

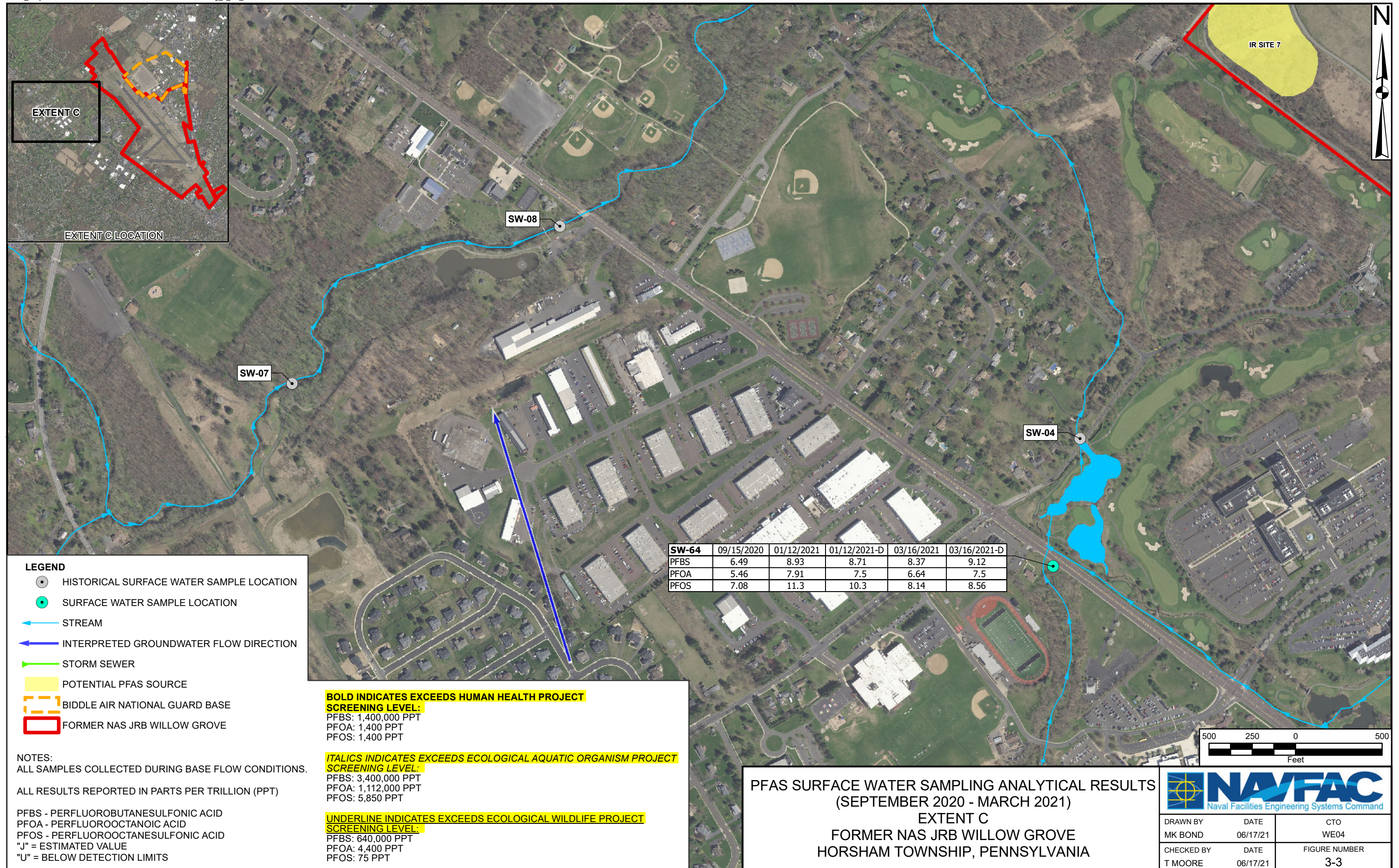
SCREENING LEVEL:
PFBS: 640,000 PPT
PFOA: 4,400 PPT
PFOS: 75 PPT



PFAS SURFACE WATER SAMPLING ANALYTICAL RESULTS
(SEPTEMBER 2020 - MARCH 2021)
EXTENT B
FORMER NAS JRB WILLOW GROVE
HORSHAM TOWNSHIP, PENNSYLVANIA



DRAWN BY MK BOND	DATE 07/10/21	CTO WE04
CHECKED BY T MOORE	DATE 07/10/21	FIGURE NUMBER 3-2



EXTENT C

EXTENT C LOCATION

IR SITE 7

SW-08

SW-07

SW-04

SW-64	09/15/2020	01/12/2021	01/12/2021-D	03/16/2021	03/16/2021-D
PFBS	6.49	8.93	8.71	8.37	9.12
PFOA	5.46	7.91	7.5	6.64	7.5
PFOS	7.08	11.3	10.3	8.14	8.56

- LEGEND**
- HISTORICAL SURFACE WATER SAMPLE LOCATION
 - SURFACE WATER SAMPLE LOCATION
 - STREAM
 - INTERPRETED GROUNDWATER FLOW DIRECTION
 - STORM SEWER
 - POTENTIAL PFAS SOURCE
 - BIDDLE AIR NATIONAL GUARD BASE
 - FORMER NAS JRB WILLOW GROVE

BOLD INDICATES EXCEEDS HUMAN HEALTH PROJECT SCREENING LEVEL:
 PFBS: 1,400,000 PPT
 PFOA: 1,400 PPT
 PFOS: 1,400 PPT

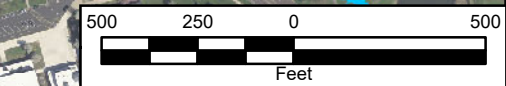
ITALICS INDICATES EXCEEDS ECOLOGICAL AQUATIC ORGANISM PROJECT SCREENING LEVEL:
 PFBS: 3,400,000 PPT
 PFOA: 1,112,000 PPT
 PFOS: 5,850 PPT

UNDERLINE INDICATES EXCEEDS ECOLOGICAL WILDLIFE PROJECT SCREENING LEVEL:
 PFBS: 640,000 PPT
 PFOA: 4,400 PPT
 PFOS: 75 PPT

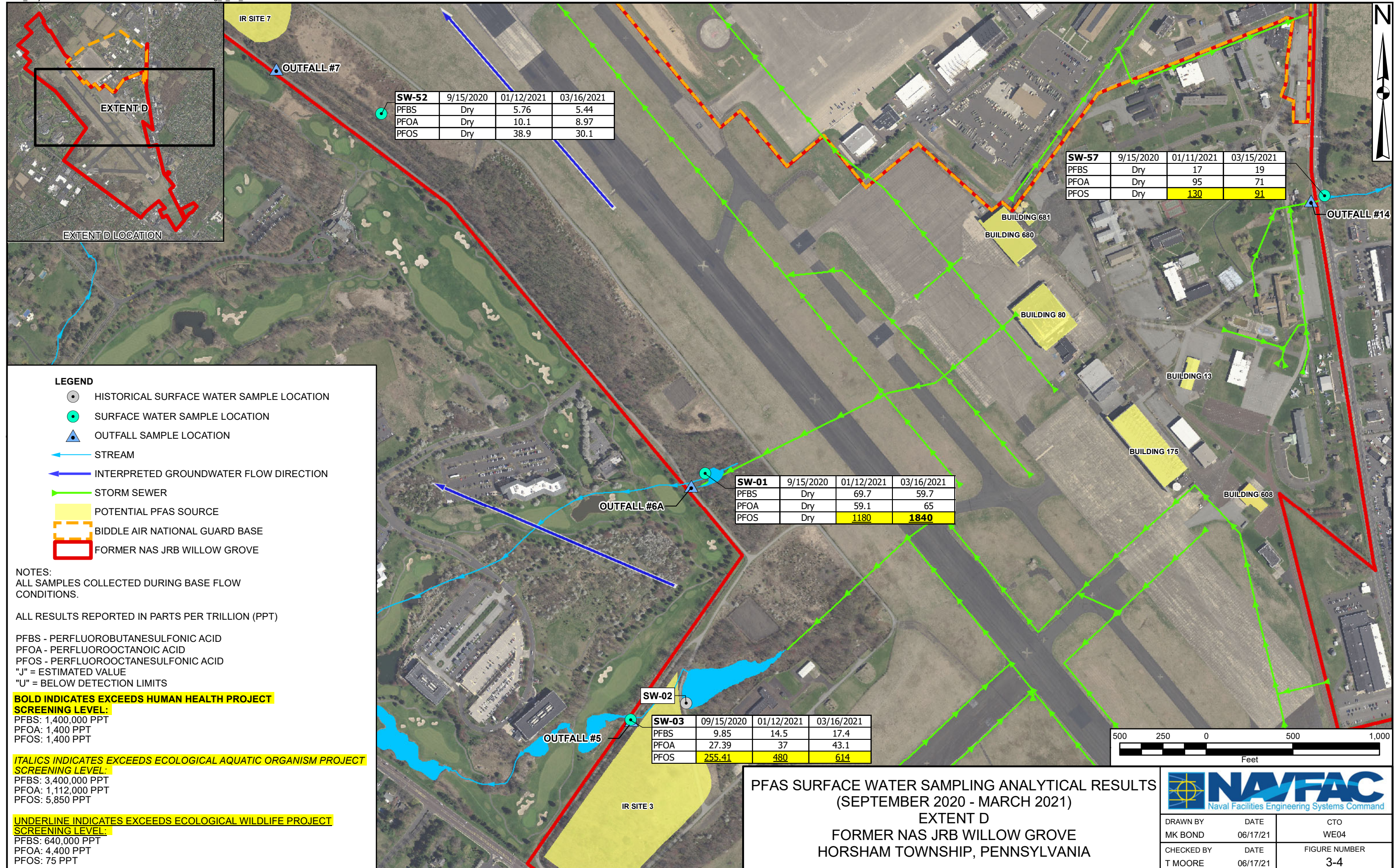
NOTES:
 ALL SAMPLES COLLECTED DURING BASE FLOW CONDITIONS.
 ALL RESULTS REPORTED IN PARTS PER TRILLION (PPT)

PFBS - PERFLUOROBUTANESULFONIC ACID
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 "J" = ESTIMATED VALUE
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PFAS SURFACE WATER SAMPLING ANALYTICAL RESULTS
 (SEPTEMBER 2020 - MARCH 2021)
 EXTENT C
 FORMER NAS JRB WILLOW GROVE
 HORSHAM TOWNSHIP, PENNSYLVANIA



DRAWN BY	DATE
MK BOND	06/17/21
CHECKED BY	DATE
T MOORE	06/17/21
CTO	FIGURE NUMBER
WE04	3-3



SW-52	9/15/2020	01/12/2021	03/16/2021
PFBS	Dry	5.76	5.44
PFOA	Dry	10.1	8.97
PFOS	Dry	38.9	30.1

SW-57	9/15/2020	01/11/2021	03/15/2021
PFBS	Dry	17	19
PFOA	Dry	95	71
PFOS	Dry	130	91

SW-01	9/15/2020	01/12/2021	03/16/2021
PFBS	Dry	69.7	59.7
PFOA	Dry	59.1	65
PFOS	Dry	1180	1840

SW-03	09/15/2020	01/12/2021	03/16/2021
PFBS	9.85	14.5	17.4
PFOA	27.39	37	43.1
PFOS	255.41	480	614

- LEGEND**
- HISTORICAL SURFACE WATER SAMPLE LOCATION
 - SURFACE WATER SAMPLE LOCATION
 - OUTFALL SAMPLE LOCATION
 - STREAM
 - INTERPRETED GROUNDWATER FLOW DIRECTION
 - STORM SEWER
 - POTENTIAL PFAS SOURCE
 - BIDDLE AIR NATIONAL GUARD BASE
 - FORMER NAS JRB WILLOW GROVE

NOTES:
 ALL SAMPLES COLLECTED DURING BASE FLOW CONDITIONS.
 ALL RESULTS REPORTED IN PARTS PER TRILLION (PPT)
 PFBS - PERFLUOROBUTANESULFONIC ACID
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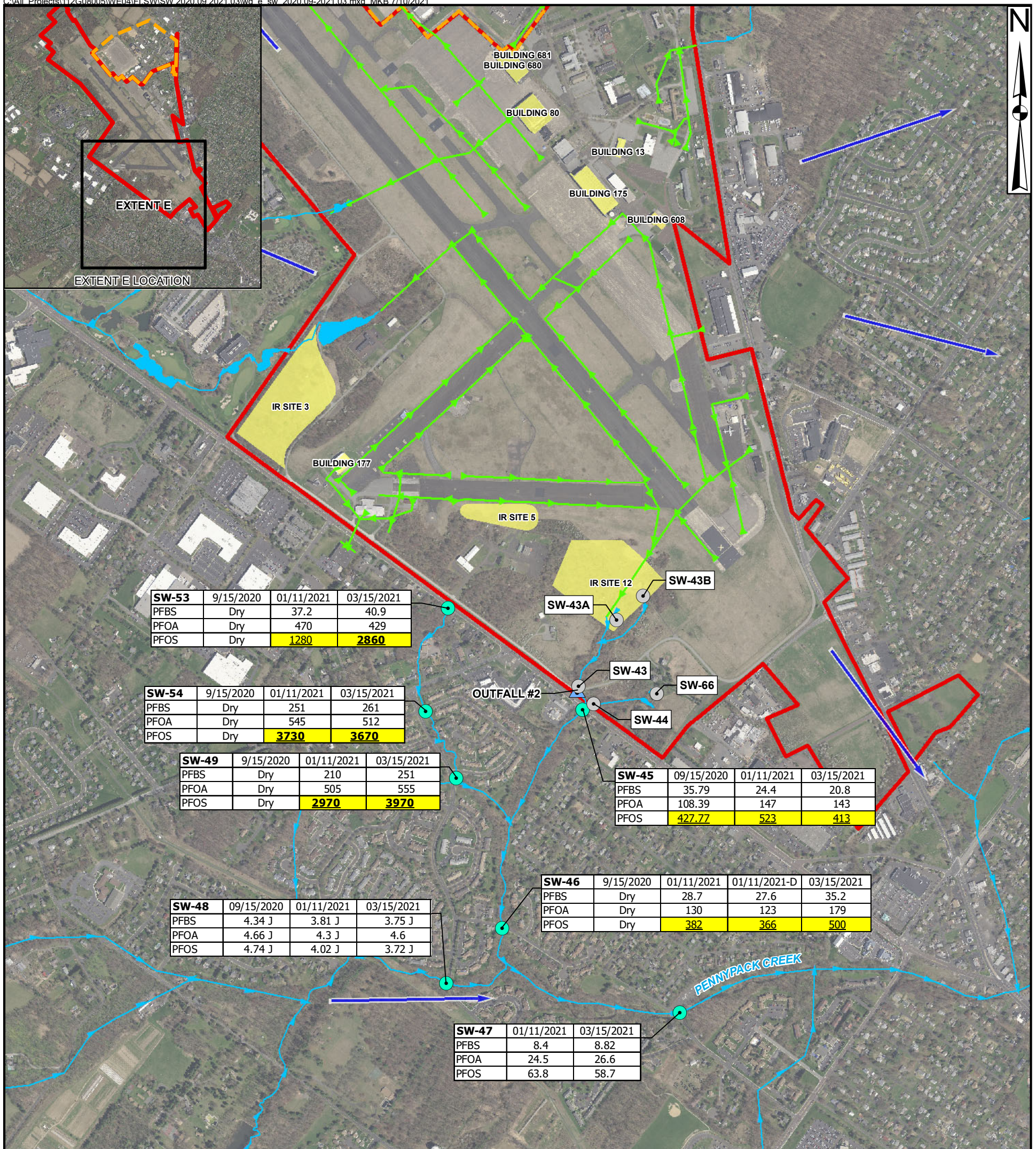
BOLD INDICATES EXCEEDS HUMAN HEALTH PROJECT SCREENING LEVEL:
 PFBS: 1,400,000 PPT
 PFOA: 1,400 PPT
 PFOS: 1,400 PPT

ITALICS INDICATES EXCEEDS ECOLOGICAL AQUATIC ORGANISM PROJECT SCREENING LEVEL:
 PFBS: 3,400,000 PPT
 PFOA: 1,112,000 PPT
 PFOS: 5,850 PPT

UNDERLINE INDICATES EXCEEDS ECOLOGICAL WILDLIFE PROJECT SCREENING LEVEL:
 PFBS: 640,000 PPT
 PFOA: 4,400 PPT
 PFOS: 75 PPT

PFAS SURFACE WATER SAMPLING ANALYTICAL RESULTS
 (SEPTEMBER 2020 - MARCH 2021)
 EXTENT D
 FORMER NAS JRB WILLOW GROVE
 HORSHAM TOWNSHIP, PENNSYLVANIA

DRAWN BY	DATE	CTO
MK BOND	06/17/21	WE04
CHECKED BY	DATE	FIGURE NUMBER
T MOORE	06/17/21	3-4



SW-53	9/15/2020	01/11/2021	03/15/2021
PFBS	Dry	37.2	40.9
PFOA	Dry	470	429
PFOS	Dry	1280	2860

SW-54	9/15/2020	01/11/2021	03/15/2021
PFBS	Dry	251	261
PFOA	Dry	545	512
PFOS	Dry	3730	3670

SW-49	9/15/2020	01/11/2021	03/15/2021
PFBS	Dry	210	251
PFOA	Dry	505	555
PFOS	Dry	2970	3970

SW-48	09/15/2020	01/11/2021	03/15/2021
PFBS	4.34 J	3.81 J	3.75 J
PFOA	4.66 J	4.3 J	4.6
PFOS	4.74 J	4.02 J	3.72 J

SW-45	09/15/2020	01/11/2021	03/15/2021
PFBS	35.79	24.4	20.8
PFOA	108.39	147	143
PFOS	427.77	523	413

SW-46	9/15/2020	01/11/2021	01/11/2021-D	03/15/2021
PFBS	Dry	28.7	27.6	35.2
PFOA	Dry	130	123	179
PFOS	Dry	382	366	500

SW-47	01/11/2021	03/15/2021
PFBS	8.4	8.82
PFOA	24.5	26.6
PFOS	63.8	58.7

LEGEND

- HISTORICAL SURFACE WATER SAMPLE LOCATION
- SURFACE WATER SAMPLE LOCATION
- OUTFALL SAMPLE LOCATION
- STREAM
- INTERPRETED GROUNDWATER FLOW DIRECTION
- STORM SEWER
- POTENTIAL PFAS SOURCE
- BIDDLE AIR NATIONAL GUARD BASE
- FORMER NAS JRB WILLOW GROVE

BOLD INDICATES EXCEEDS HUMAN HEALTH PROJECT SCREENING LEVEL:

PFBS: 1,400,000 PPT
 PFOA: 1,400 PPT
 PFOS: 1,400 PPT

ITALICS INDICATES EXCEEDS ECOLOGICAL AQUATIC ORGANISM PROJECT SCREENING LEVEL:

PFBS: 3,400,000 PPT
 PFOA: 1,112,000 PPT
 PFOS: 5,850 PPT

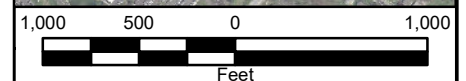
UNDERLINE INDICATES EXCEEDS ECOLOGICAL WILDLIFE PROJECT SCREENING LEVEL:

PFBS: 640,000 PPT
 PFOA: 4,400 PPT
 PFOS: 75 PPT

NOTES:
 ALL SAMPLES COLLECTED DURING BASE FLOW CONDITIONS.

ALL RESULTS REPORTED IN PARTS PER TRILLION (PPT)

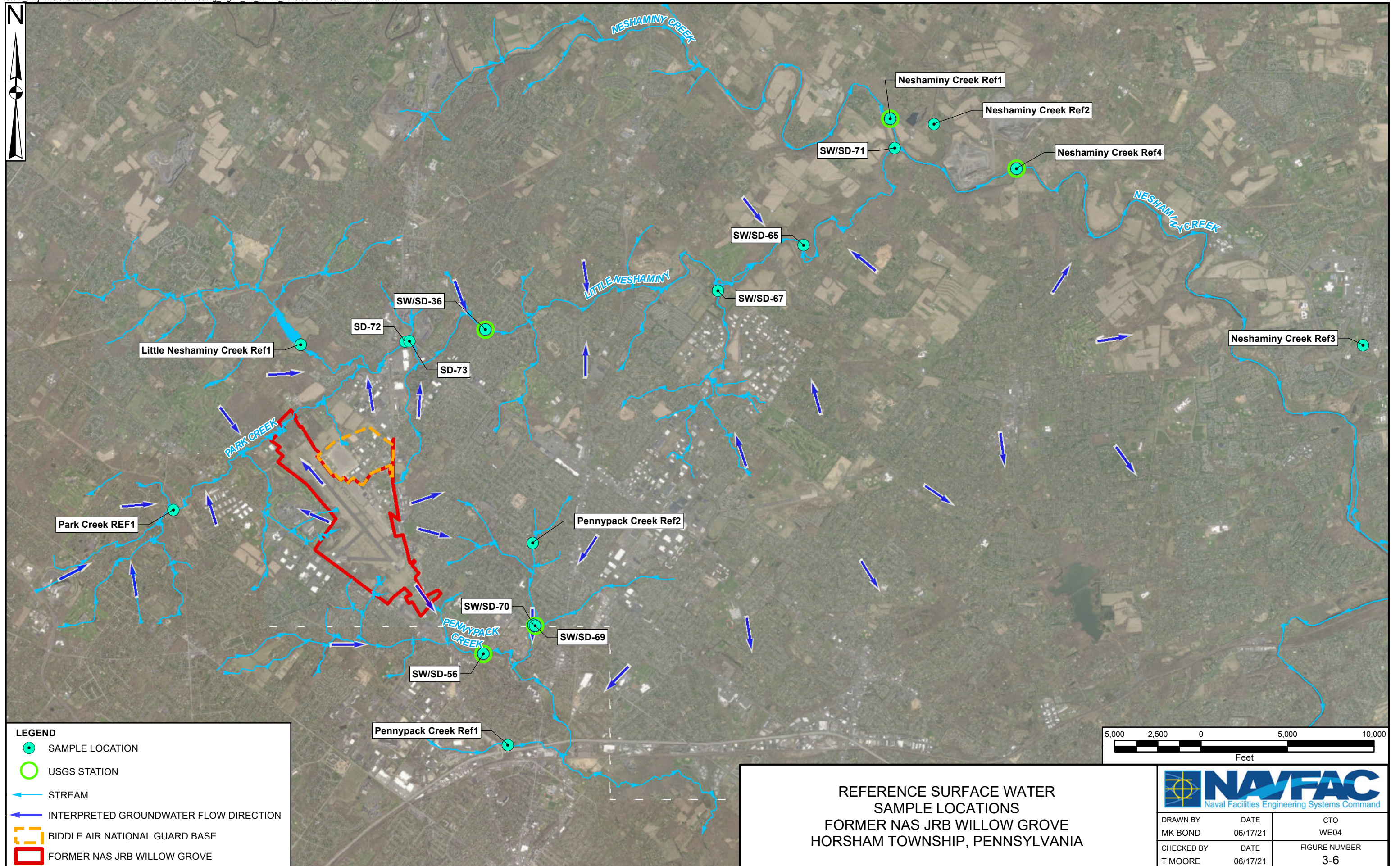
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PFAS SURFACE WATER SAMPLING ANALYTICAL RESULTS
 (SEPTEMBER 2020 - MARCH 2021)
 EXTENT E
 FORMER NAS JRB WILLOW GROVE
 HORSHAM TOWNSHIP, PENNSYLVANIA



DRAWN BY	DATE	CTO
MK BOND	07/10/21	WE04
CHECKED BY	DATE	FIGURE NUMBER
T MOORE	07/10/21	3-5

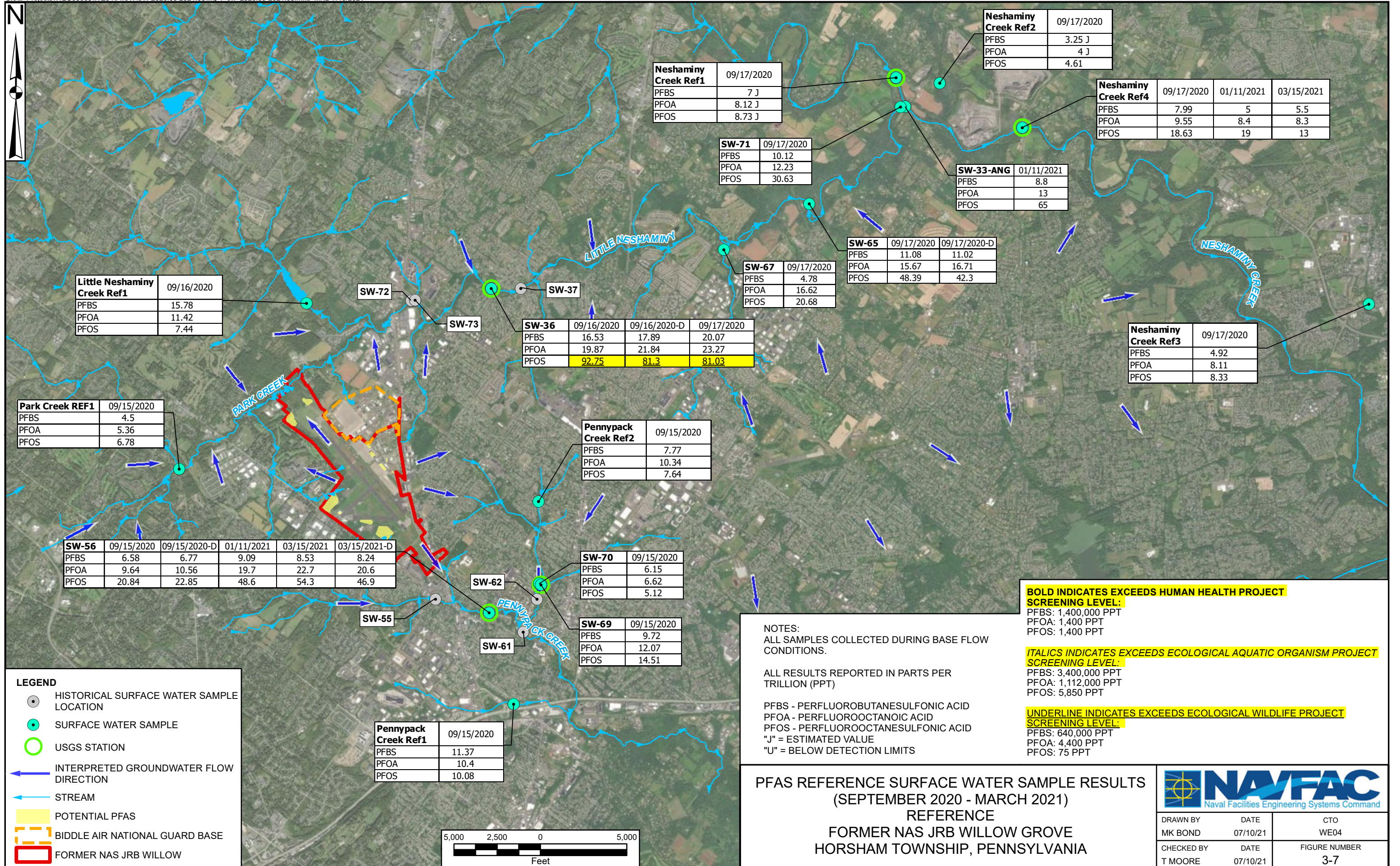


LEGEND

- SAMPLE LOCATION
- USGS STATION
- STREAM
- INTERPRETED GROUNDWATER FLOW DIRECTION
- BIDDLE AIR NATIONAL GUARD BASE
- FORMER NAS JRB WILLOW GROVE

**REFERENCE SURFACE WATER
 SAMPLE LOCATIONS
 FORMER NAS JRB WILLOW GROVE
 HORSHAM TOWNSHIP, PENNSYLVANIA**

 Naval Facilities Engineering Systems Command		CTO
		WE04
DRAWN BY	DATE	FIGURE NUMBER
MK BOND	06/17/21	3-6
CHECKED BY	DATE	
T MOORE	06/17/21	



Little Neshaminy Creek Ref1	09/16/2020
PFBS	15.78
PFOA	11.42
PFOS	7.44

Park Creek REF1	09/15/2020
PFBS	4.5
PFOA	5.36
PFOS	6.78

SW-56	09/15/2020	09/15/2020-D	01/11/2021	03/15/2021	03/15/2021-D
PFBS	6.58	6.77	9.09	8.53	8.24
PFOA	9.64	10.56	19.7	22.7	20.6
PFOS	20.84	22.85	48.6	54.3	46.9

Pennypack Creek Ref1	09/15/2020
PFBS	11.37
PFOA	10.4
PFOS	10.08

Neshaminy Creek Ref1	09/17/2020
PFBS	7 J
PFOA	8.12 J
PFOS	8.73 J

SW-71	09/17/2020
PFBS	10.12
PFOA	12.23
PFOS	30.63

SW-36	09/16/2020	09/16/2020-D	09/17/2020
PFBS	16.53	17.89	20.07
PFOA	19.87	21.84	23.27
PFOS	92.75	81.3	81.03

Pennypack Creek Ref2	09/15/2020
PFBS	7.77
PFOA	10.34
PFOS	7.64

SW-70	09/15/2020
PFBS	6.15
PFOA	6.62
PFOS	5.12

SW-69	09/15/2020
PFBS	9.72
PFOA	12.07
PFOS	14.51

Neshaminy Creek Ref2	09/17/2020
PFBS	3.25 J
PFOA	4 J
PFOS	4.61

Neshaminy Creek Ref4	09/17/2020	01/11/2021	03/15/2021
PFBS	7.99	5	5.5
PFOA	9.55	8.4	8.3
PFOS	18.63	19	13

SW-33-ANG	01/11/2021
PFBS	8.8
PFOA	13
PFOS	65

SW-65	09/17/2020	09/17/2020-D
PFBS	11.08	11.02
PFOA	15.67	16.71
PFOS	48.39	42.3

SW-67	09/17/2020
PFBS	4.78
PFOA	16.62
PFOS	20.68

Neshaminy Creek Ref3	09/17/2020
PFBS	4.92
PFOA	8.11
PFOS	8.33

BOLD INDICATES EXCEEDS HUMAN HEALTH PROJECT SCREENING LEVEL:

PFBS: 1,400,000 PPT
PFOA: 1,400 PPT
PFOS: 1,400 PPT

ITALICS INDICATES EXCEEDS ECOLOGICAL AQUATIC ORGANISM PROJECT SCREENING LEVEL:

PFBS: 3,400,000 PPT
PFOA: 1,112,000 PPT
PFOS: 5,850 PPT

UNDERLINE INDICATES EXCEEDS ECOLOGICAL WILDLIFE PROJECT SCREENING LEVEL:

PFBS: 640,000 PPT
PFOA: 4,400 PPT
PFOS: 75 PPT

NOTES:
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PFAS REFERENCE SURFACE WATER SAMPLE RESULTS
(SEPTEMBER 2020 - MARCH 2021)
REFERENCE
FORMER NAS JRB WILLOW GROVE
HORSHAM TOWNSHIP, PENNSYLVANIA



DRAWN BY	DATE	CTO
MK BOND	07/10/21	WE04
CHECKED BY	DATE	FIGURE NUMBER
T MOORE	07/10/21	3-7

