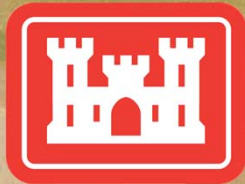


Former Fort Devens Army Installation Project Status Update 21 September 2017



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Agenda

- Preview of Results from Site Inspection (SI) for Per-Polyfluoroalkyl Substances (PFAS)





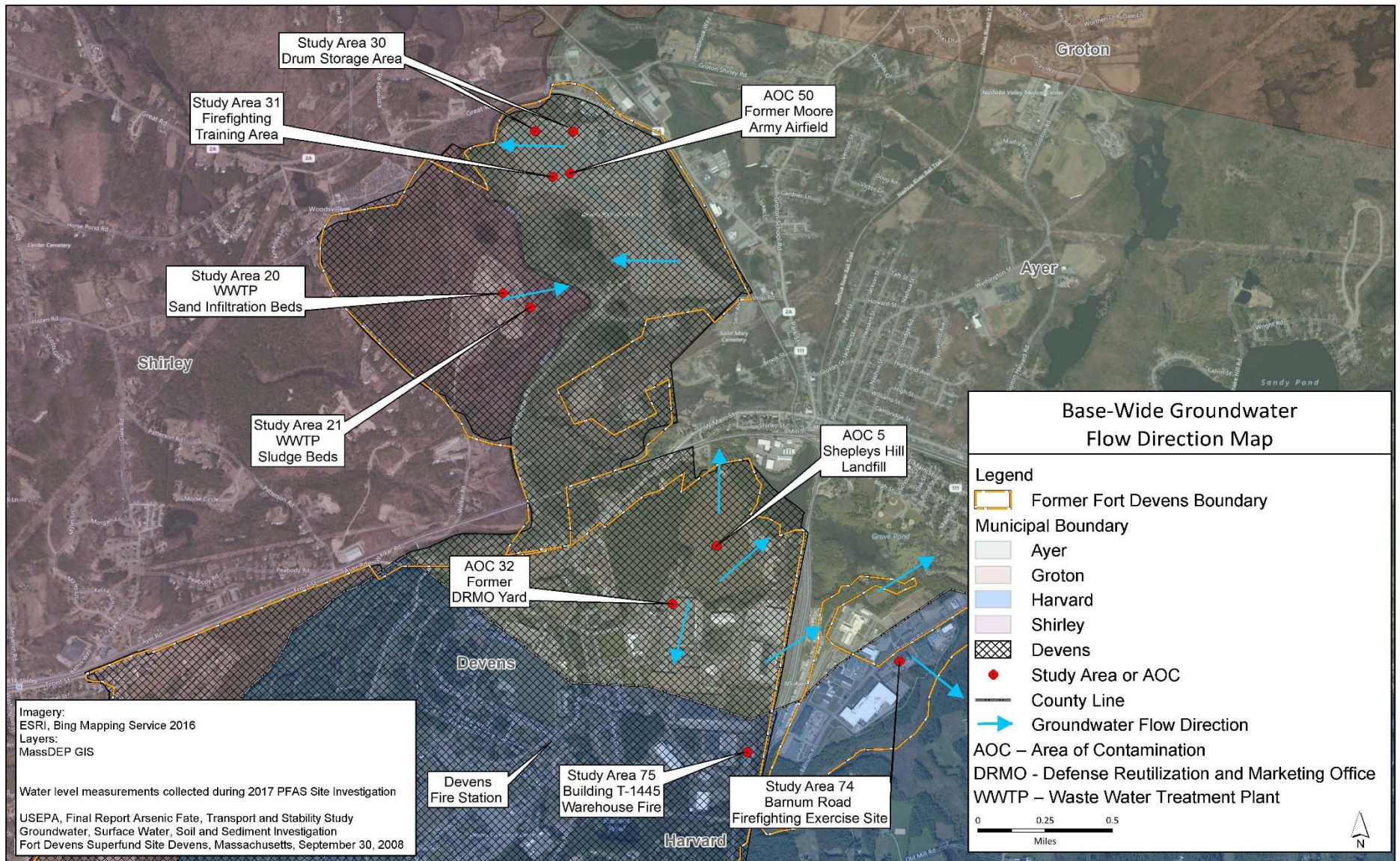
Background

- Perfluorinated chemicals (PFCs) are found world-wide in the environment, wildlife, and humans (USEPA 2009). Adverse effects have been identified in laboratory animals and wildlife.
- Since 2000, there has been a focus on minimizing the potential impact of PFCs, including regulation of PFAS
- PFAS, which are found in many products including historically in fire-fighting foam, identified as emerging contaminant (March 2014)
- May 2016 Environmental Protection Agency (EPA) sets Health Advisory Levels for Drinking Water
- Sept 2016 - Army submits draft Preliminary Assessment for Devens evaluating historical use of PFAS compounds; identifies 9 potential source areas
- June 2017 – Army commences Expedited SI to determine presence or absence of PFAS at these sites





Site Inspection (SI) Sampling Locations





Ground Water (GW) Sampling

- **Area of Contamination (AOC) 5-Sheply's Hill Landfill:**
 - ▶ 20 GW samples (existing wells: 7-39 feet (ft.) below ground surface [bgs])
- **AOC 32-Former DRMO Yard:**
 - ▶ 8 GW samples (existing wells: 13-25 ft. bgs)
- **SA 20 and 21-Devens WWTP:**
 - ▶ 3 GW samples (existing wells: 11-14 ft. bgs)/3 GW samples at sludge/sand filter beds (temp. points: 16-19 ft. bgs)
- **AOC 50-Former Moore Airfield:**
 - ▶ 18 GW samples at fire station, hangar, runway (temp. points: 19-67 ft. bgs)
- **SA 30-Former Moore Airfield Drum Storage Area:**
 - ▶ 6 GW samples (temp. points: 60-65 ft. bgs)
- **SA 31-Former Moore Airfield Firefighting Training Area:**
 - ▶ 2 GW samples (existing wells: 7-69 ft. bgs)/4 GW samples (temp. points: 60-66 ft. bgs)
- **SA 74-Barnum Road Firefighting Exercise Site:**
 - ▶ 4 GW samples (temp. points: 2-15 ft. bgs)
- **SA 75-Building T-1445 Warehouse Fire:**
 - ▶ 3 GW samples (existing wells: 37-39 ft. bgs)/4 GW samples (temp. points: 12-18 ft. bgs)

Note: All sites except AOC 5, AOC 32, SA 75 had reported individual PFOA or PFOS results above 70 ng/L (USEPA Health Advisory Level-2016) and combined PFOS and PFOA totals at SA 5, AOC 32 and SA 75 above 70 ng/L.





Soil Sampling

- **SA 20 and 21-Devens WWTP:**
 - ▶ 3 samples (one from infiltration bed and two from sludge drying beds) (3-PFOS detections 0.9-34 µg/kg/2-PFOA detections 1.3-1.4 µg/kg)
- **AOC 50-Former Moore Airfield:**
 - ▶ 17 samples (8-PFOS detections 0.78-30 µg/kg/3-PFOA detections 0.68-1.9 µg/kg)
- **SA 30-Former Moore Airfield Drum Storage Area:**
 - ▶ 6 samples collected (6-PFOS detections 1.5-92 µg/kg/4-PFOA detections 1-4.5 µg/kg)
- **SA 31-Former Moore Airfield Firefighting Training Area:**
 - ▶ 5 samples collected (5-PFOS detections 32-540 µg/kg/5-PFOA detections 3.3-15 µg/kg)
- **SA 74-Barnum Road Firefighting Exercise Site:**
 - ▶ 3 samples collected (No PFOS detections/2-PFOA detections 0.68-0.77 µg/kg)
- **SA 75-Building T-1445 Warehouse Fire:**
 - ▶ 3 samples collected (1-PFOS detection 1.2 µg/kg/No PFOA detections)





Surface Water and Sediment Sampling

- **AOC 50-Former Moore Airfield:**

- ▶ 2 surface water samples and 2 sediment samples were collected from stormwater management outfalls (at terminal ends of drainage swales)



- ▶ SW concentrations ranged from 25-180 ng/L (PFOS) and from 18-39 ng/L (PFOA). Highest concentrations at AOC50-17-19.
- ▶ Sediment concentrations ranged from 15-24 $\mu\text{g/kg}$ (PFOS) and from 1.5-2.7 $\mu\text{g/L}$ (PFOA). Highest concentrations at AOC50-17-19.





Photo Summary

AOC 5-Prep Tubing



AOC 5- Typical Setup



SA 30-Driving Rods



SA 31-Extraction
Rods



SA 74-Logging Soil Core

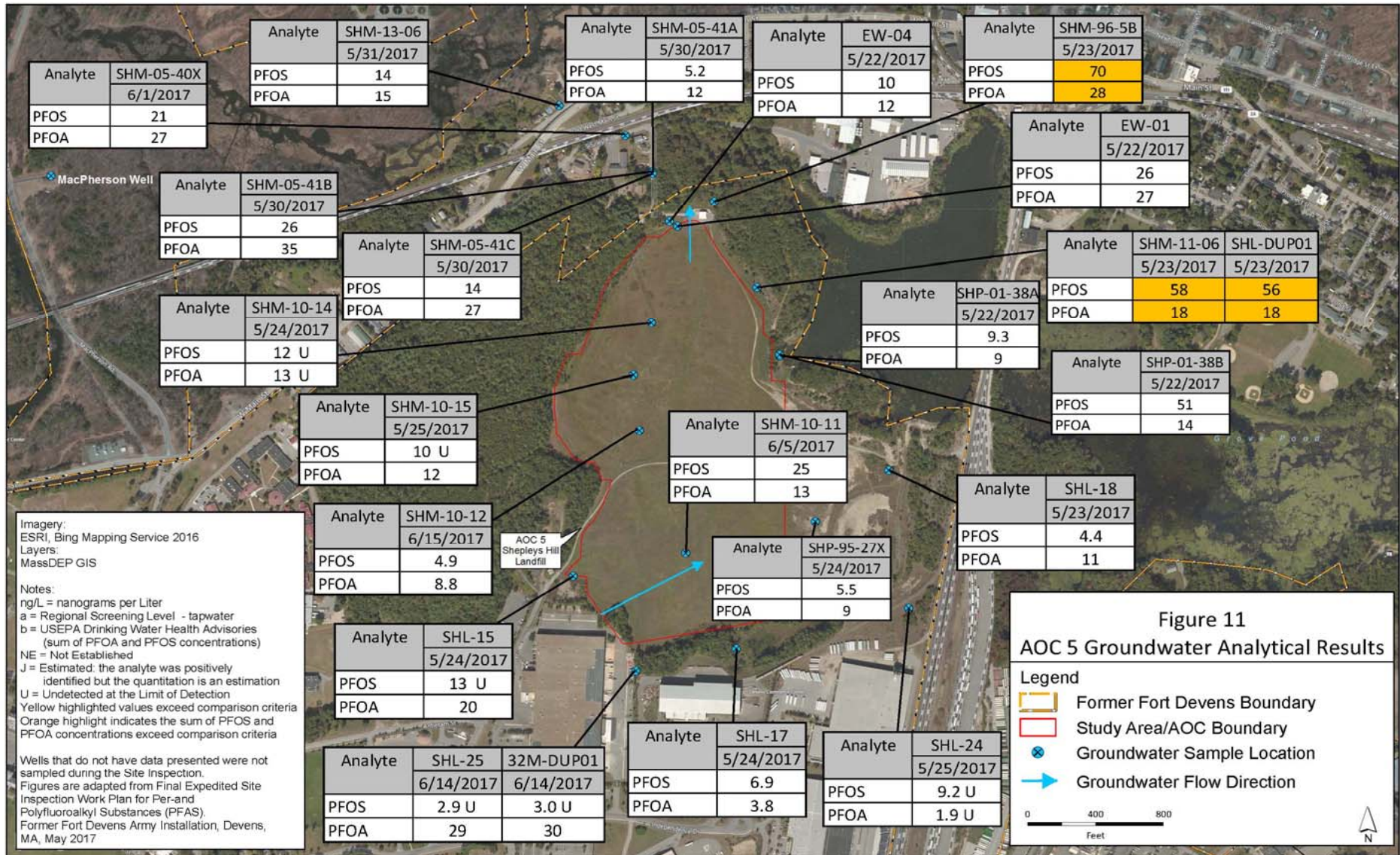


AOC 50-Outfall



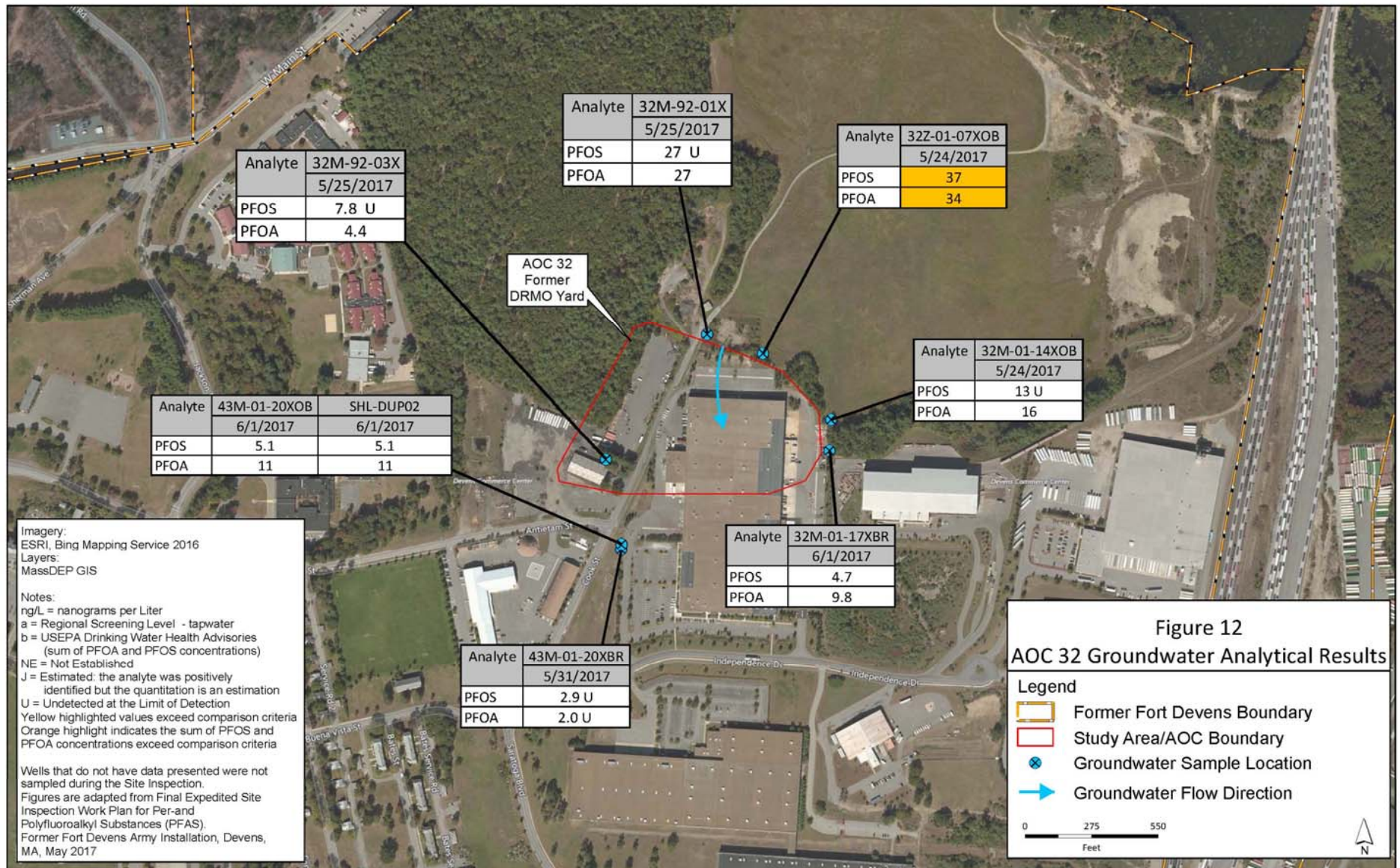


Per-Polyfluoralkyl Substances (PFAS) SI Groundwater (GW) Results at Area of Contamination (AOC) 5



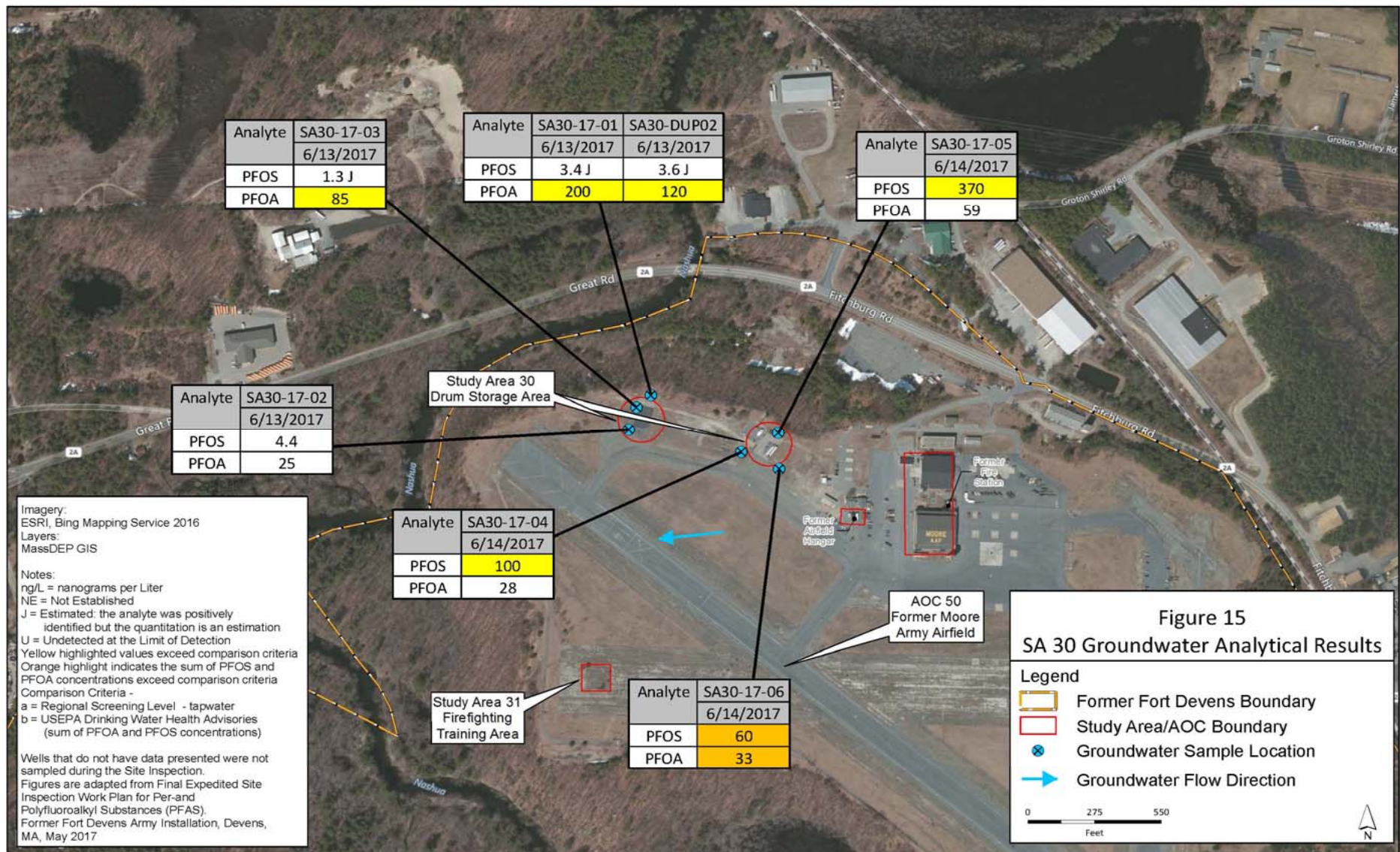


PFAS SI GW Results at AOC 32



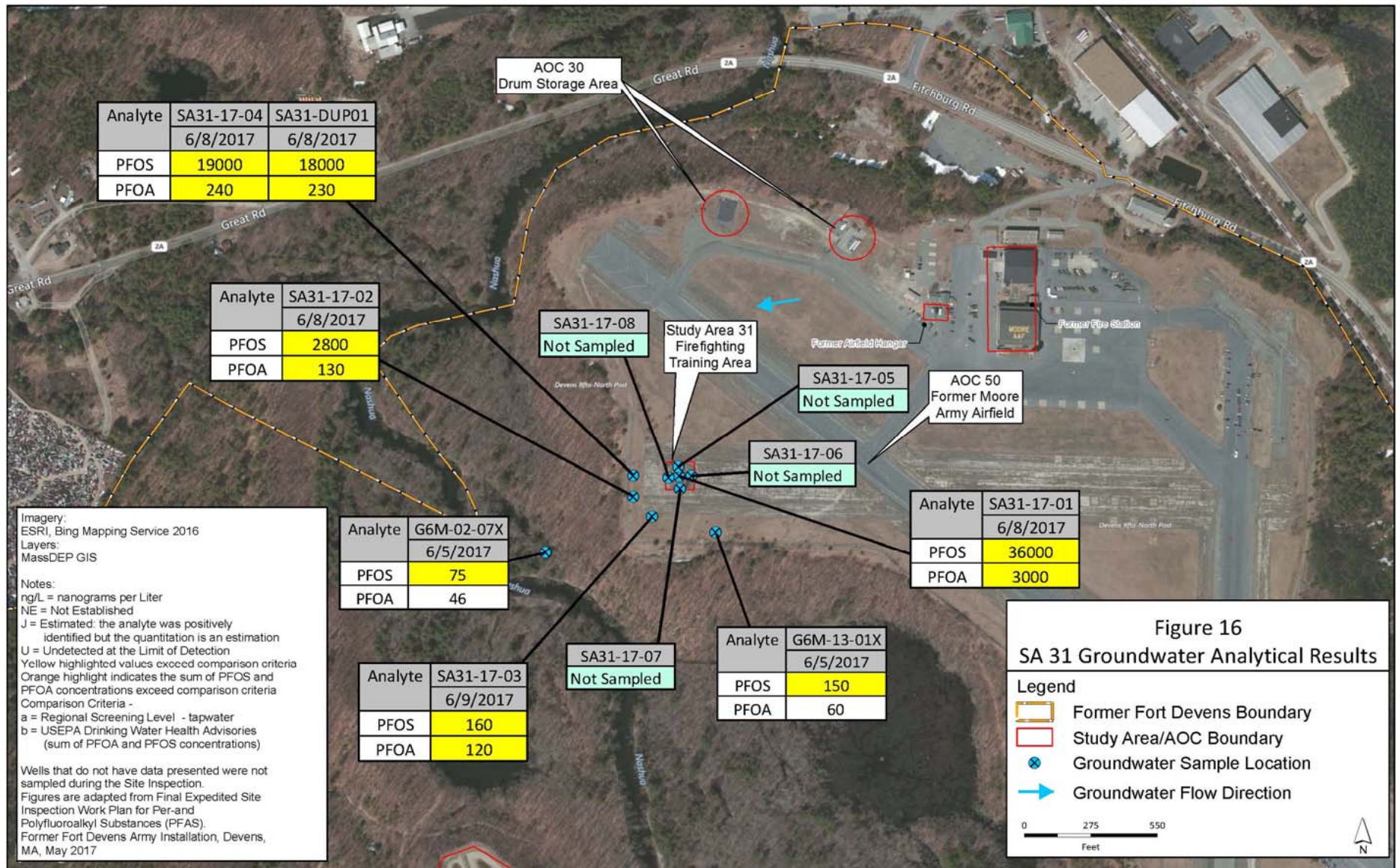


PFAS SI GW Results at Study Area (SA) 30



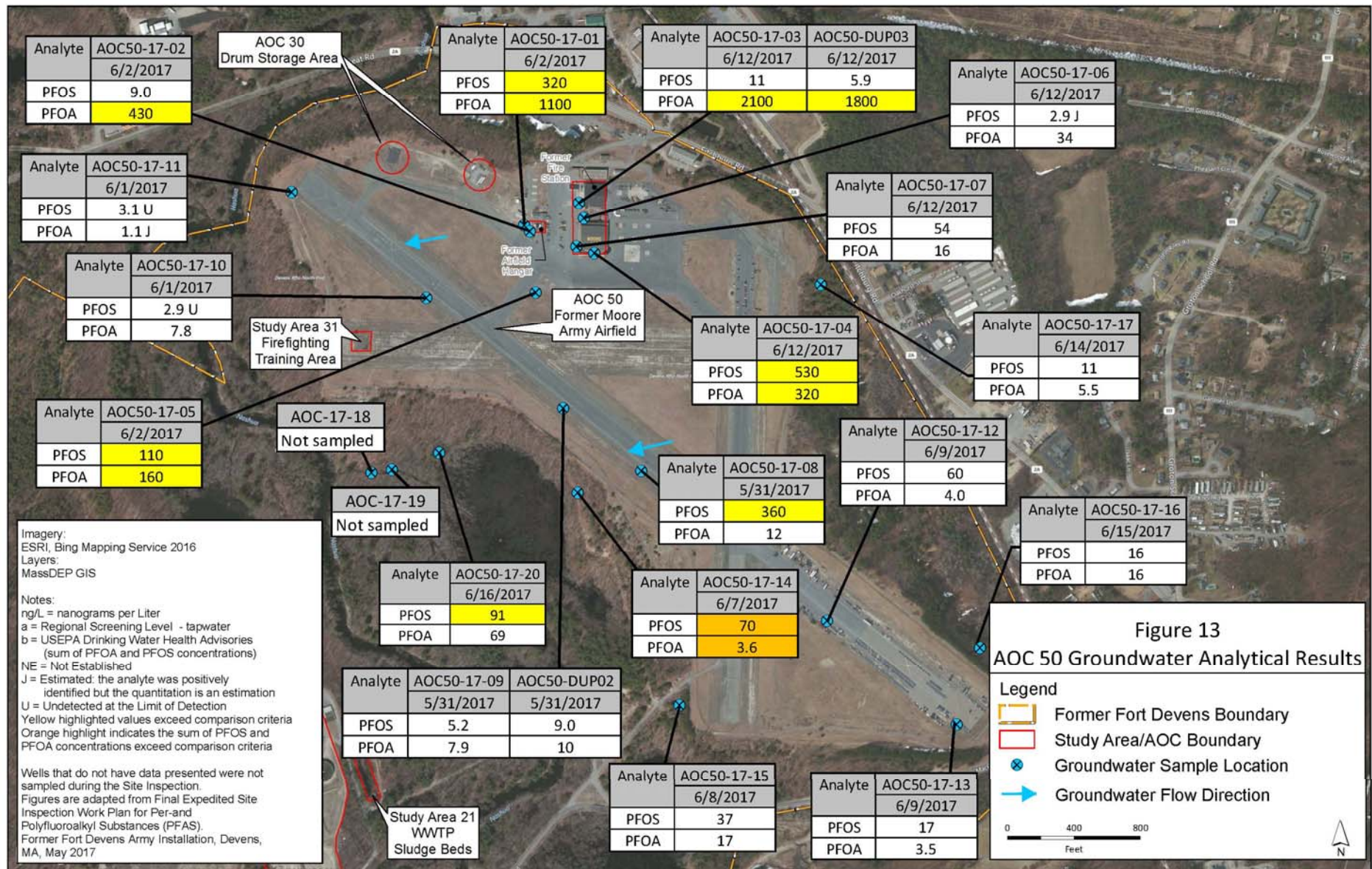


PFAS SI GW Results at SA 31



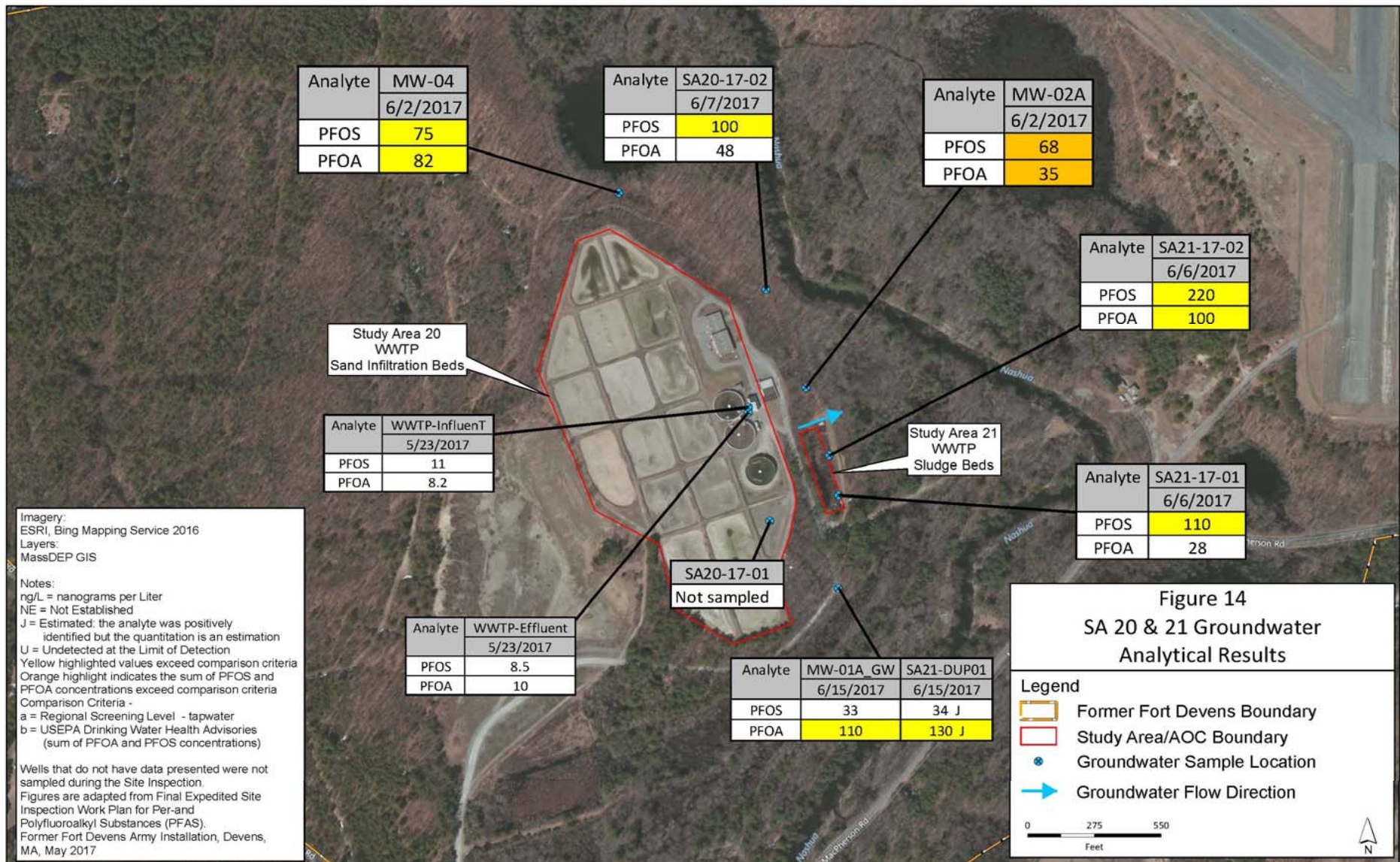


PFAS SI GW Results at AOC 50



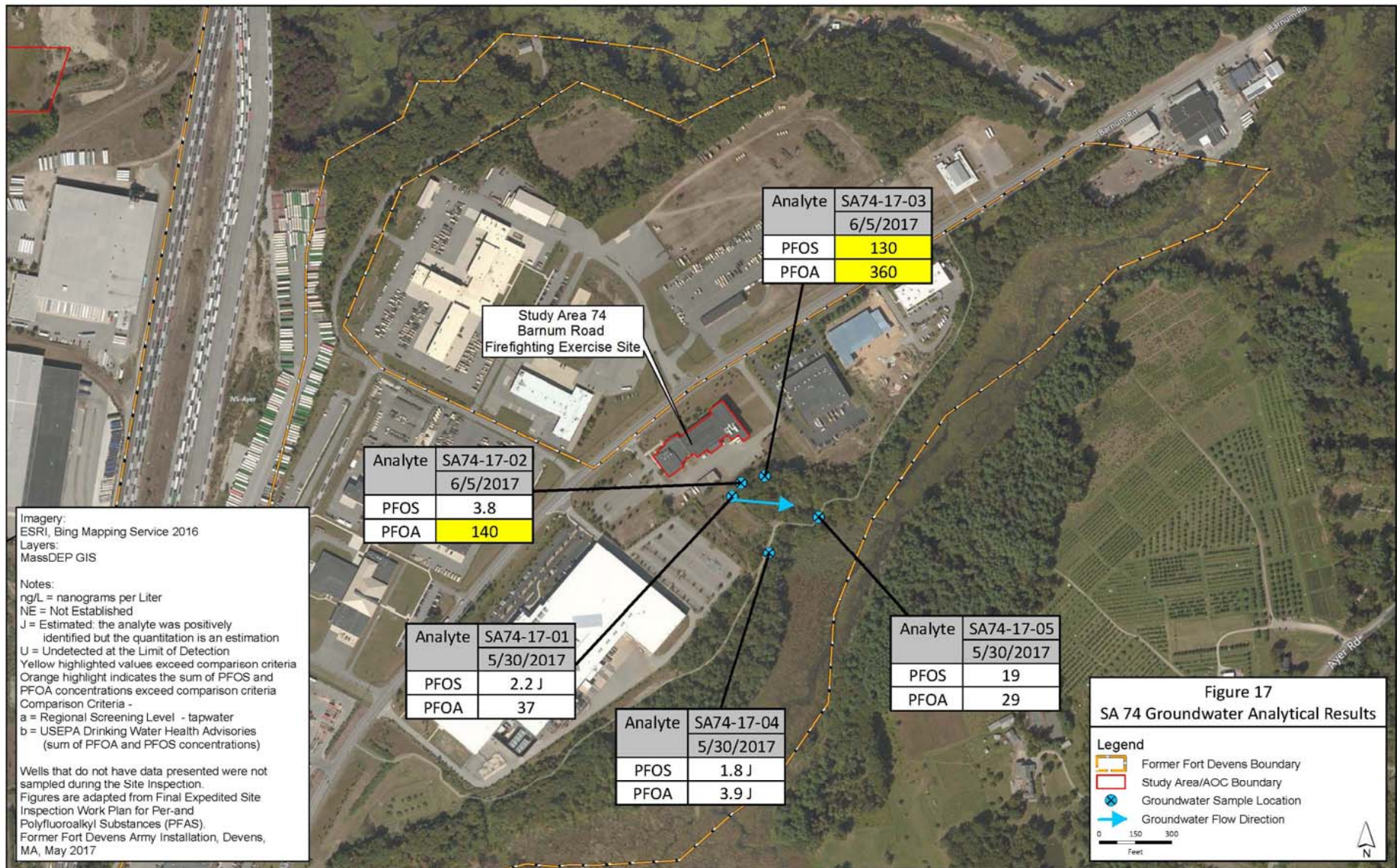


PFAS SI GW Results at SA 20 & 21



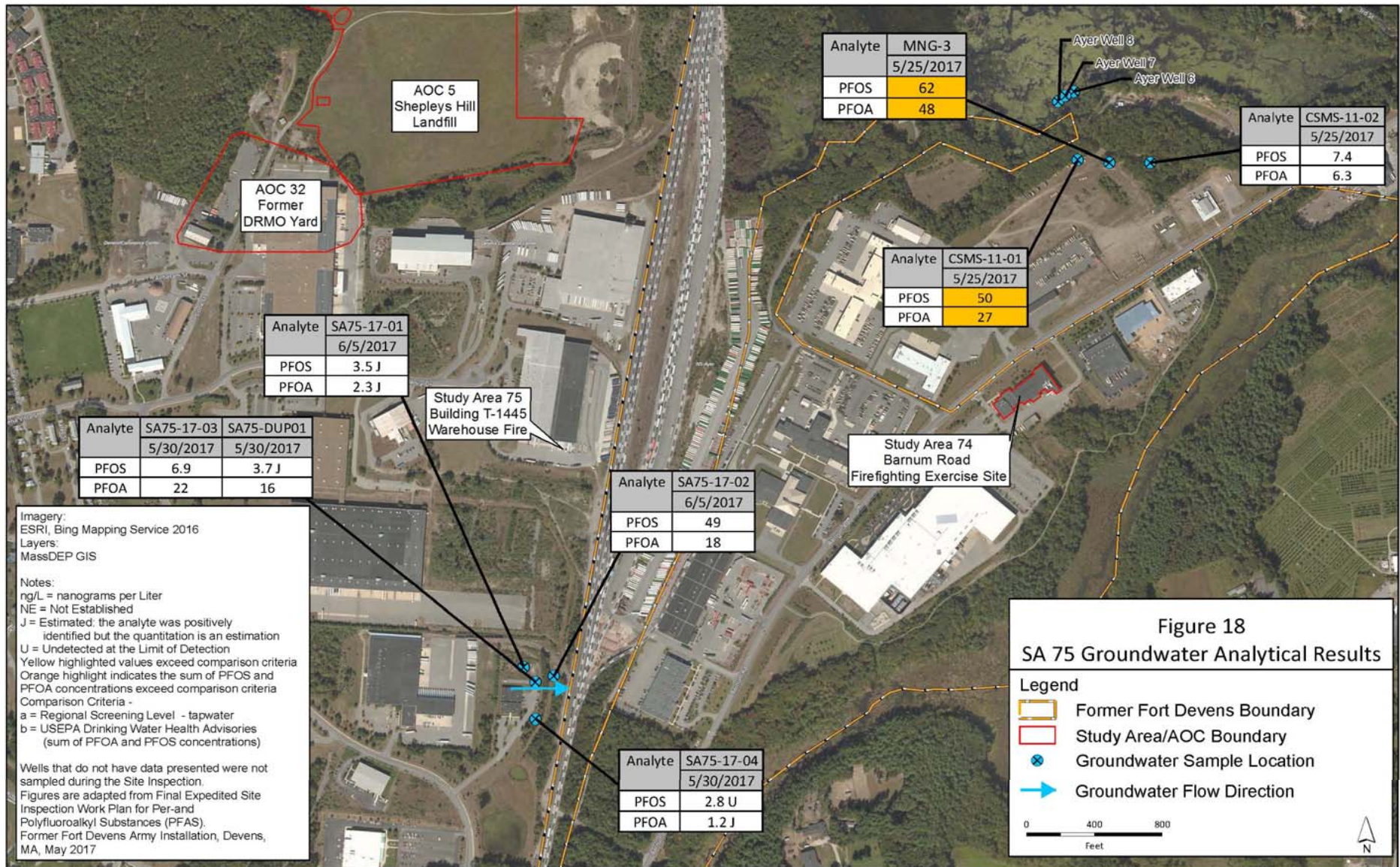


PFAS SI GW Results at SA 74



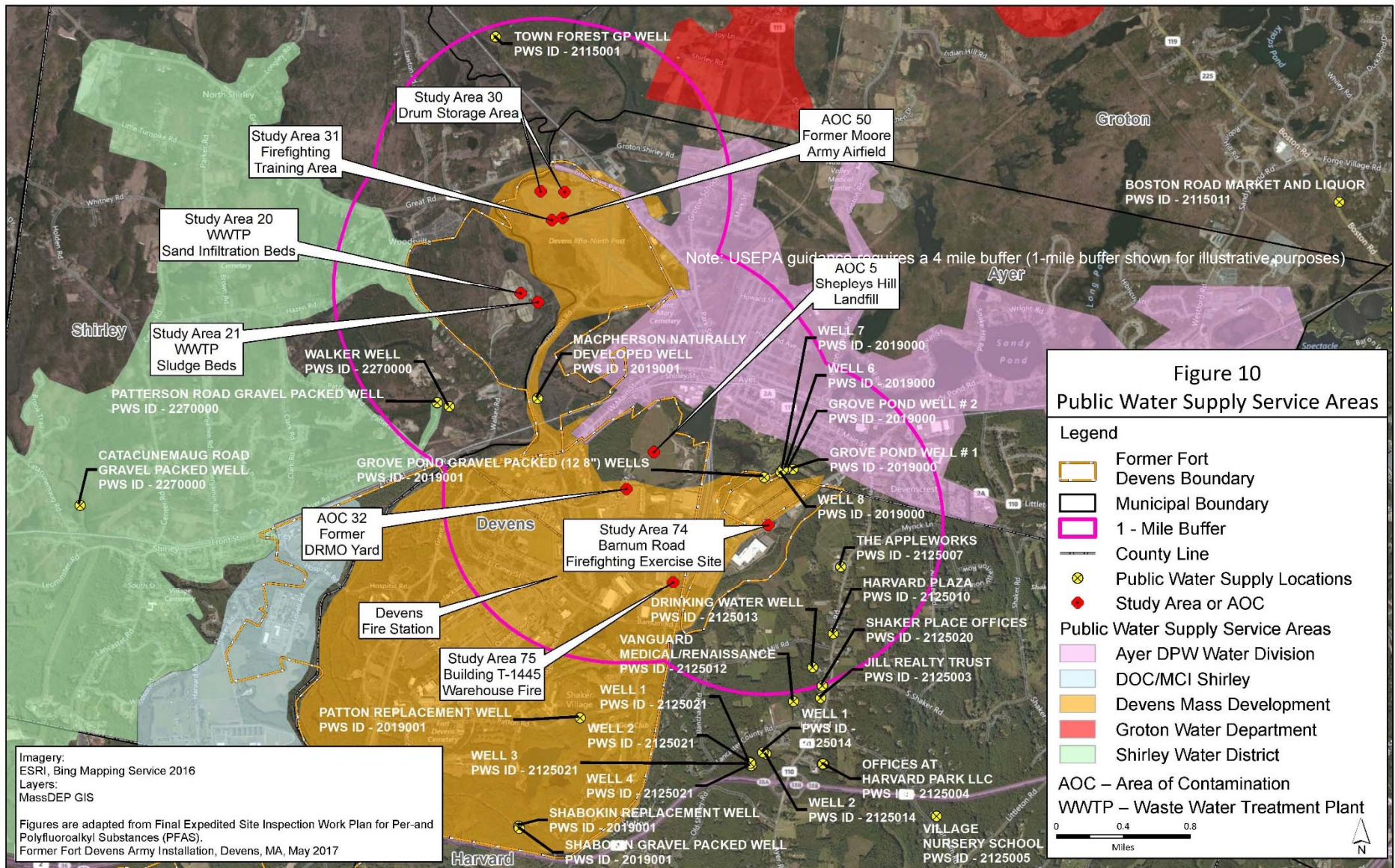


PFAS SI GW Results at SA 75





Municipal Water Supply Well





Public Supply Well PFAS Data

MassDEP PFAS Sampling Results – 9/2016 to 8/2017

Location	Well ID	Date	PFOS (ug/L)	PFOA (ug/L)	PFOS+PFOA
Ayer Wells	Ayer Multi-Finished 4 Grove	9/1/2016	0.028	0.010	0.038
		11/15/2016	0.029	0.011	0.040
		1/11/2017	0.025	0.010	0.035
		4/12/2017	0.045	0.014	0.059
		8/3/2017	0.038	0.015	0.053
	Ayer RW-06G/GW 6	9/1/2016	<0.004	0.006	0.006
		11/15/2016	<0.004	0.006	0.006
		1/11/2017	<0.004	0.007	0.007
		4/12/17	<0.004	0.007	0.007
	Ayer RW-07G/GW 7	8/3/2017	<0.004	0.007	0.007
		9/1/2016	0.007	0.009	0.016
		11/15/2016	0.006	0.009	0.015
		1/11/2017	0.005	0.008	0.013
		4/12/17	0.005	0.007	0.012
	Ayer RW-08G/GW 8	8/3/2017	0.017	0.013	0.030
		9/1/2016	0.085	0.018	0.103
		11/15/2016	0.077	0.017	0.094
		1/11/2017	0.070	0.017	0.087
		4/12/17	0.080	0.021	0.101
Devens Wells	MacPherson Well 03G	8/3/2017	0.081	0.024	0.105
		9/1/2016	0.041	0.021	0.062
		12/28/2016	0.084	0.063	0.147
	Patton Well 05G	2/22/2017	0.046	0.022	0.068
		5/16/2017	0.044	0.022	0.066
	Shabokin Well 06G	9/1/2016	<0.004	0.004	0.004
		9/1/2016	0.004	0.004	0.008
W. Groton Well	W. Groton Well 2G	4/12/2017	0.004	0.007	0.011
Shirley Wells	Patterson 03G	9/1/16	<0.004	<0.002	--
	Walker 04G	9/1/2016	<0.004	<0.002	--



PAL = Project Action Limit and EPA Lifetime Health Advisory (.070 µg/L)



Addendum to SI (Devens Fire Department)

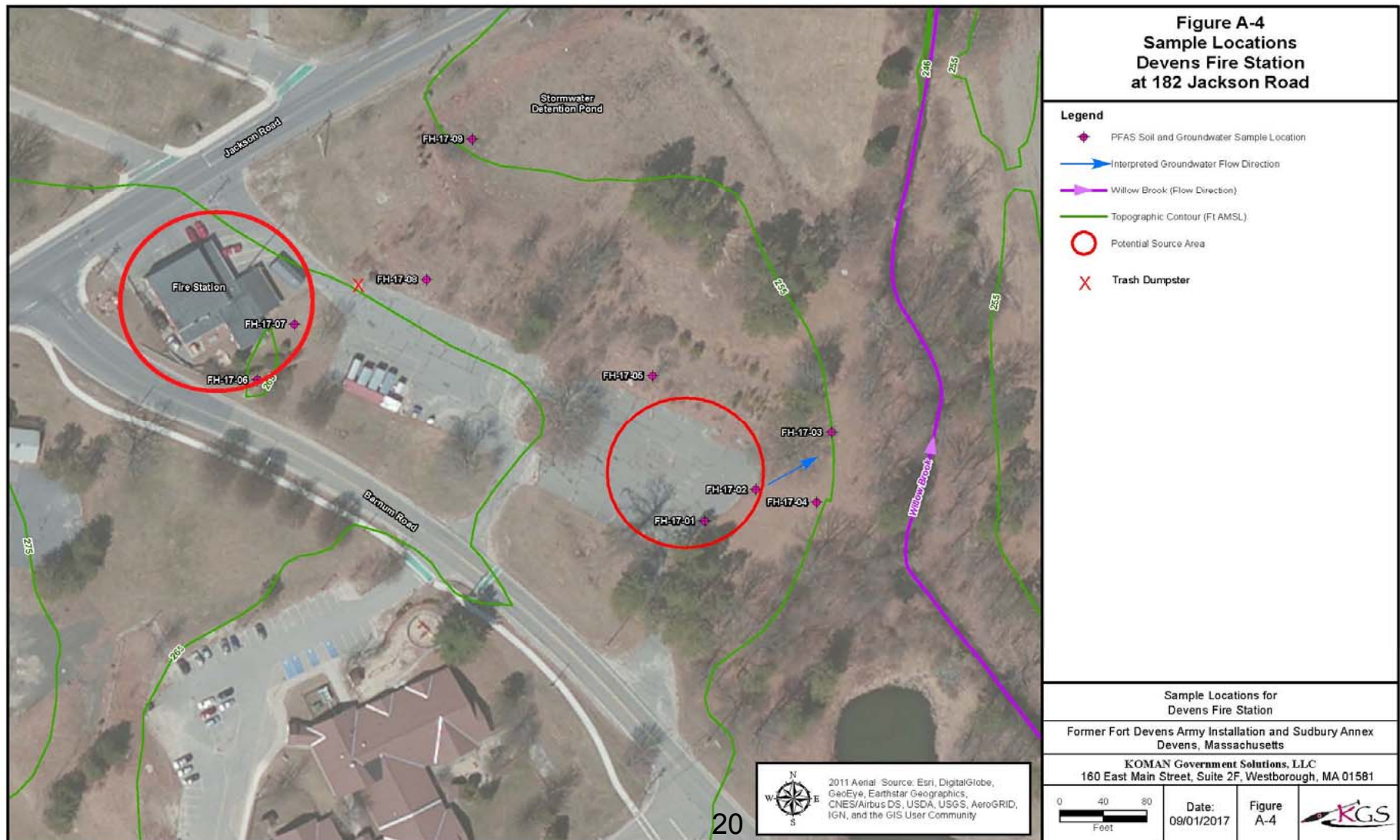


- EPA requested fire station be added as Potential Source Area for investigation under the SI (after initial phase of field work completed).
- Jackson Fire Station transitioned to MassDevelopment and Devens Fire Department in 1996. No records on storage/use of Aqueous Film-Forming Foam (AFFF) foam prior to 1996.
- Deputy Fire Chief confirmed foam used to extinguish dumpster fire in early 1990s (July 6, 2017 interview).
- Devens Fire Chief confirmed foam application on pavement as part of training since 1996.
- Nine locations proposed for PFAS sampling (soil and GW).





Devens Fire Department Proposed Sampling





General Conclusions

- PFAS in groundwater and soil confirmed at several former Ft. Devens sites
- Impacts on Ayer supply wells may be from historic releases along Barnum Rd (SA-74/75)
- Impacts on the MacPherson Well may be from releases at former DRMO, SHL or Ayer WWTP
- Finished water samples from all of the supply wells tested are currently below EPA's Lifetime Health Advisory





Next Steps

- 09/28/17 - Draft SI Report to Agencies
- October/November 2017 – Conduct supplemental ESI sampling at Devens Fire Department
- Army will begin preparation of Remedial Investigation Work Plan to identify the nature and extent of PFAS detected during the ESI at Former Ft. Devens Sites





Former Fort Devens Army Installation Project Status Update

Questions?

