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U.S. DEPARTMENT OF ENERGY

PFAS Update

BNL Community Advisory Council
September 9, 2021

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BNL Groundwater Protection Group

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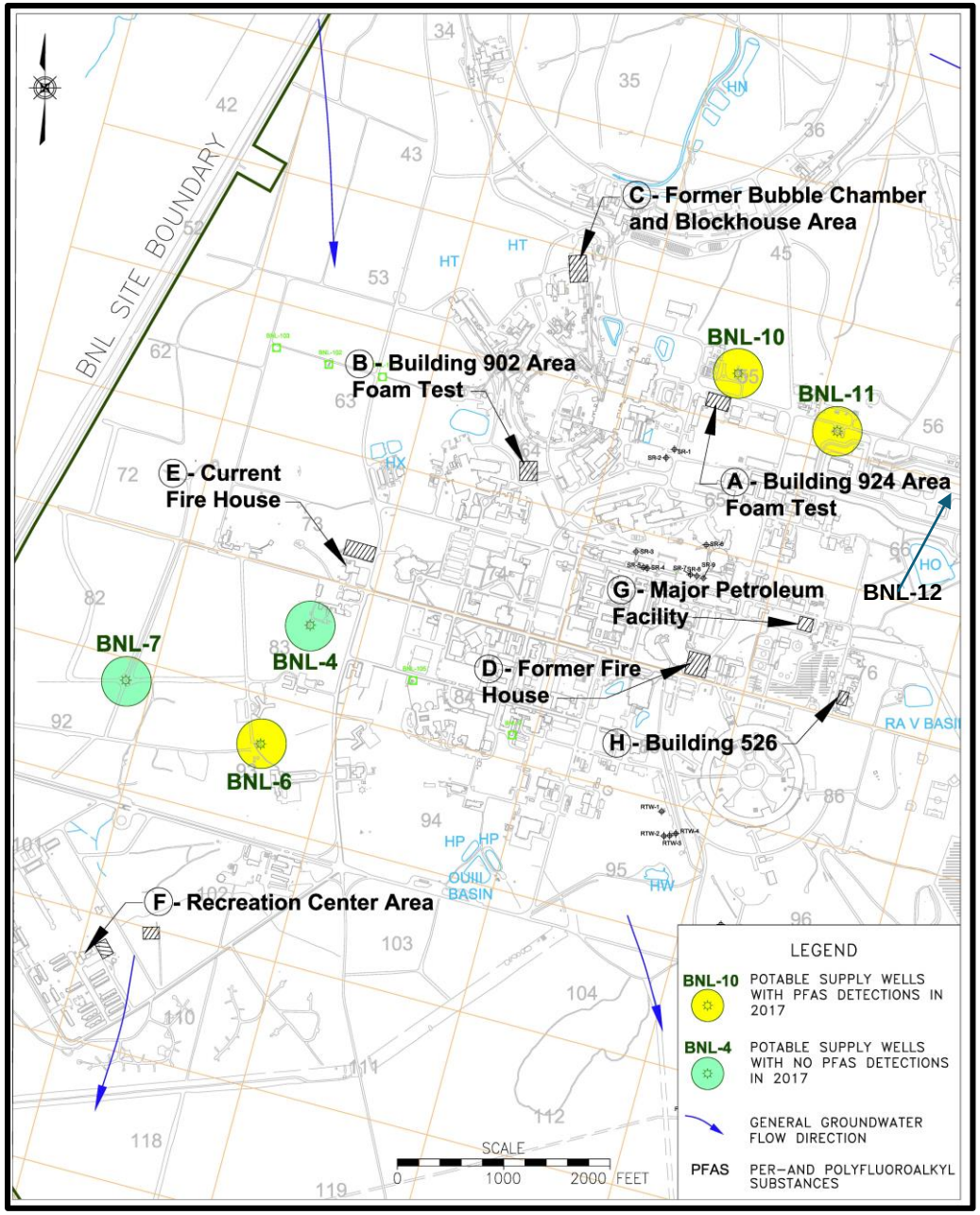
Agenda

- Update on PFAS treatment systems for BNL potable water supply wells
- Integration of PFAS and 1,4-dioxane remedial actions into the ongoing CERCLA program
- Installation of two PFAS groundwater treatment systems
- Continued characterization of the current firehouse PFAS plume

BNL Water Supply Wells

- Return to service granular activated carbon filters to remove PFOS and PFOA
  - Filters at BNL-10 and BNL-11 are back in service
    - Monitoring results show that the filters are effective
    - BNL working with SCDHS/ NYSDEC to end the temporary “deferral” from the new standards received for supply well BNL-10
  - BNL-12 expected to be back in service by January 2022
  - Treatment is not required for BNL-7
  - BNL-4 and BNL-6 will remain inactive due to PFAS



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Integrate Response to PFAS (and 1,4-Dioxane) into CERCLA Program

- Under the Federal Facilities Agreement, DOE is under a continuing obligation to notify EPA and NYSDEC of any additional potential Areas of Concern which DOE becomes aware
- EPA and NYSDEC agreed to recent BNL/DOE recommendation to integrate future investigations and remedial responses into the CERCLA program
  - Planned remediation of the current firehouse and former firehouse PFAS plumes as a Time Critical Removal Action
  - Full Remedial Investigation/Feasibility Study (RI/FS) will be required

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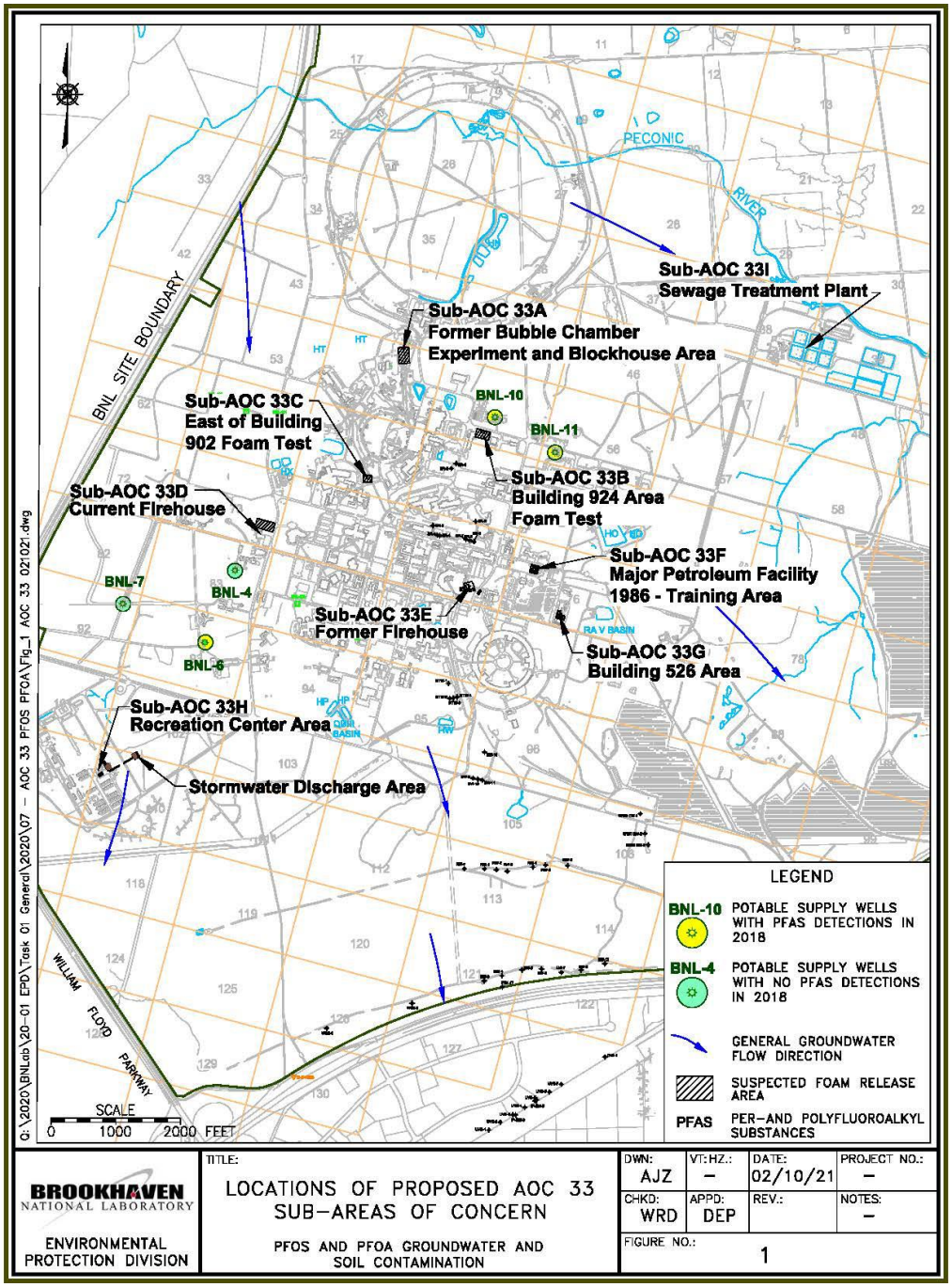
Integration of PFAS and 1,4-Dioxane into CERCLA Program

- Established Operable Unit (OU VIII) that covers PFOS, PFOA and 1,4-dioxane remedial investigation and remedial actions
- Established new Areas of Concern 33 and 34
  - AOC 33: PFOS and PFOA with 9 sub-areas (33a through 33i)
  - AOC 34: 1,4-Dioxane



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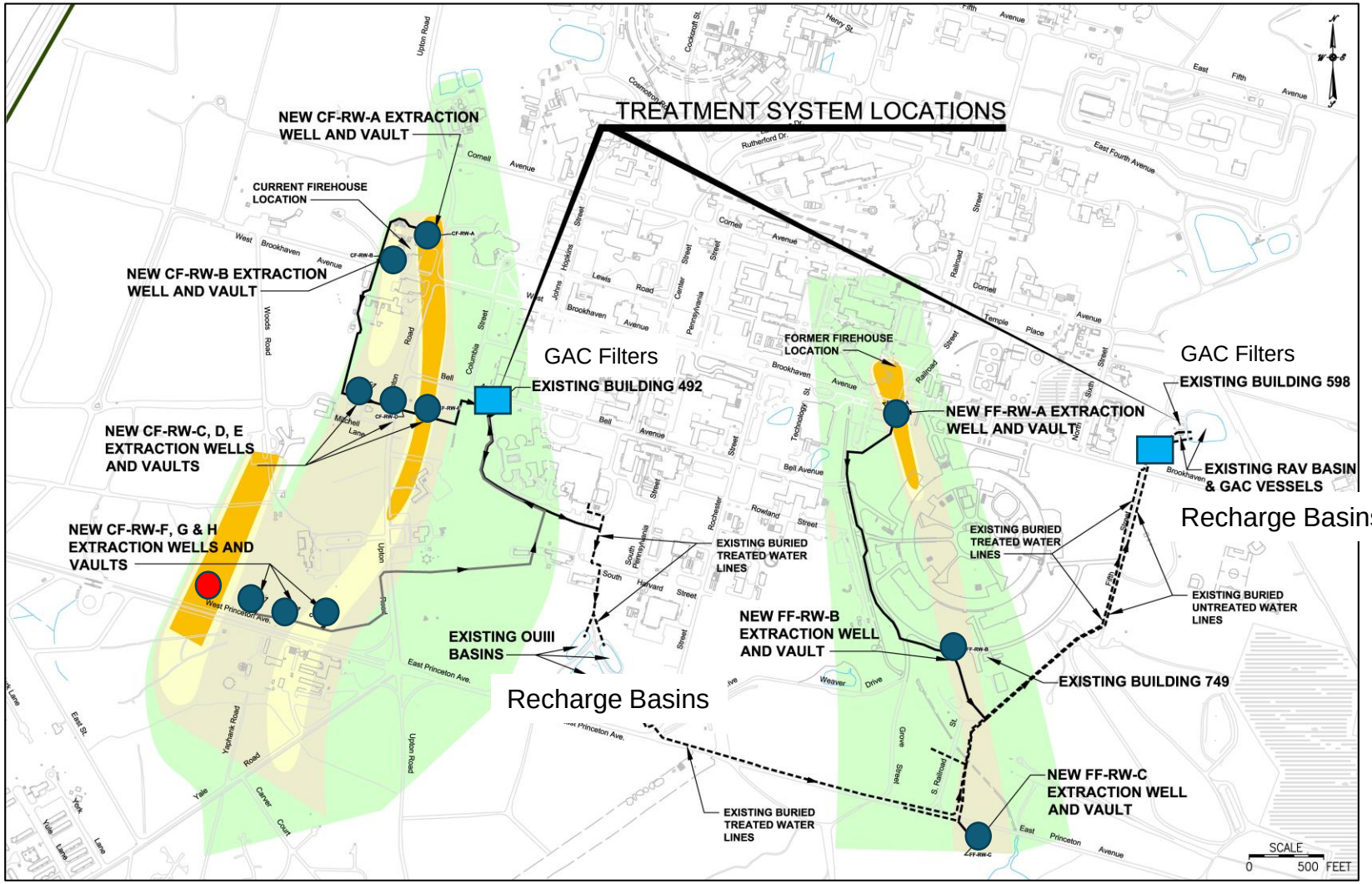
Time Critical Removal Action (TCRA)

PFAS Treatment Systems



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Treatment System Construction
Current Status

- Contractor has mobilized equipment and supplies to BNL
- First extraction well was installed near the current firehouse (completed August 26th)
- Near-term actions:
  - Installation of remaining extraction wells
  - Installation of monitoring wells
  - Installation of two carbon vessels for the current firehouse PFAS plume treatment system - into existing building
  - Installation of piping, electric and communications

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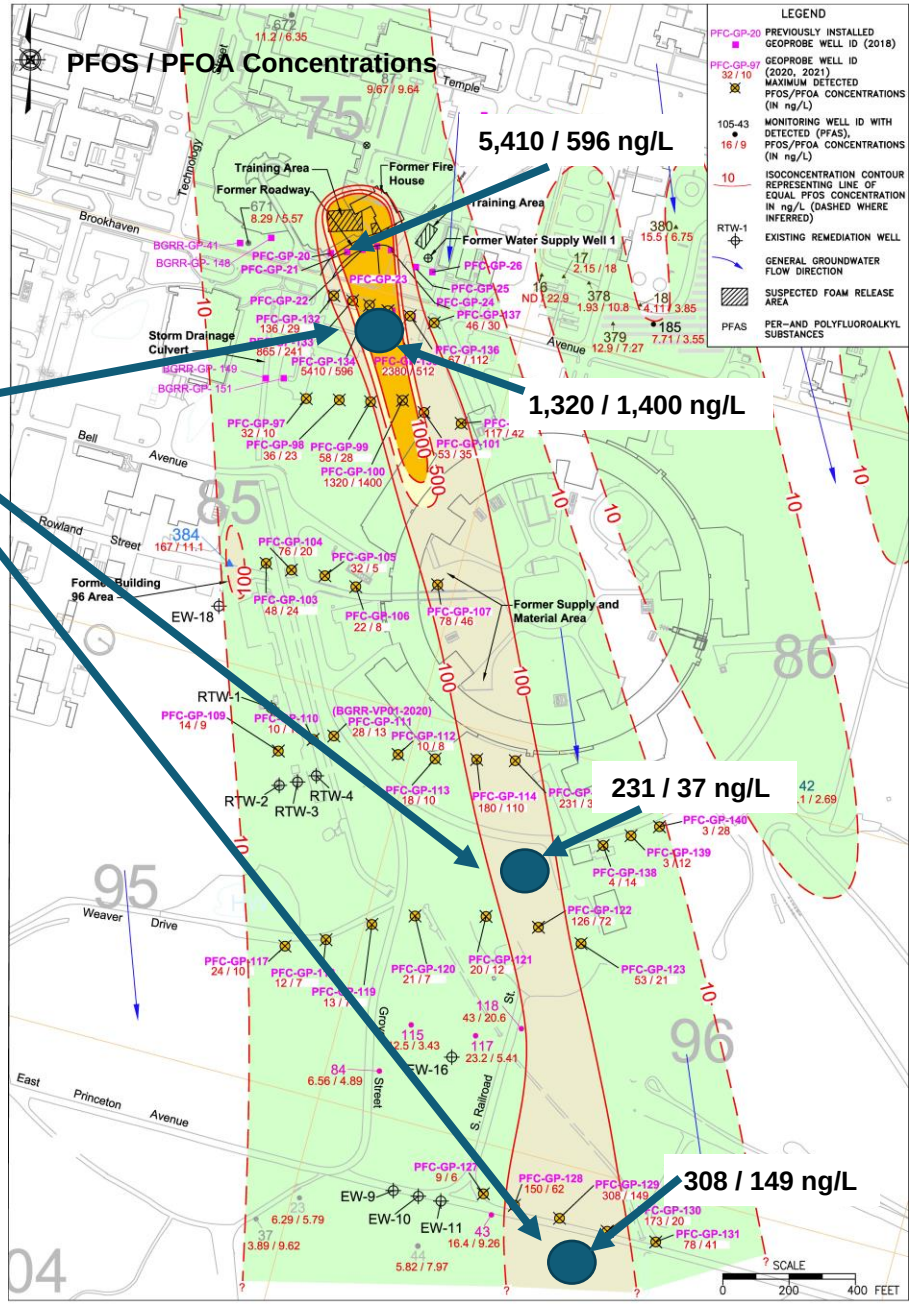
Former Firehouse Plume Treatment System Design

- Treatment system design
  - Three extraction wells
  - Capture goal of 100 ng/L for PFOS or PFOA
  - Repurposed carbon filters to be repaired and new filter building constructed
- Monitoring
  - Install 29 groundwater monitoring wells
  - Data will be used to verify the effectiveness of the treatment system and monitored natural attenuation



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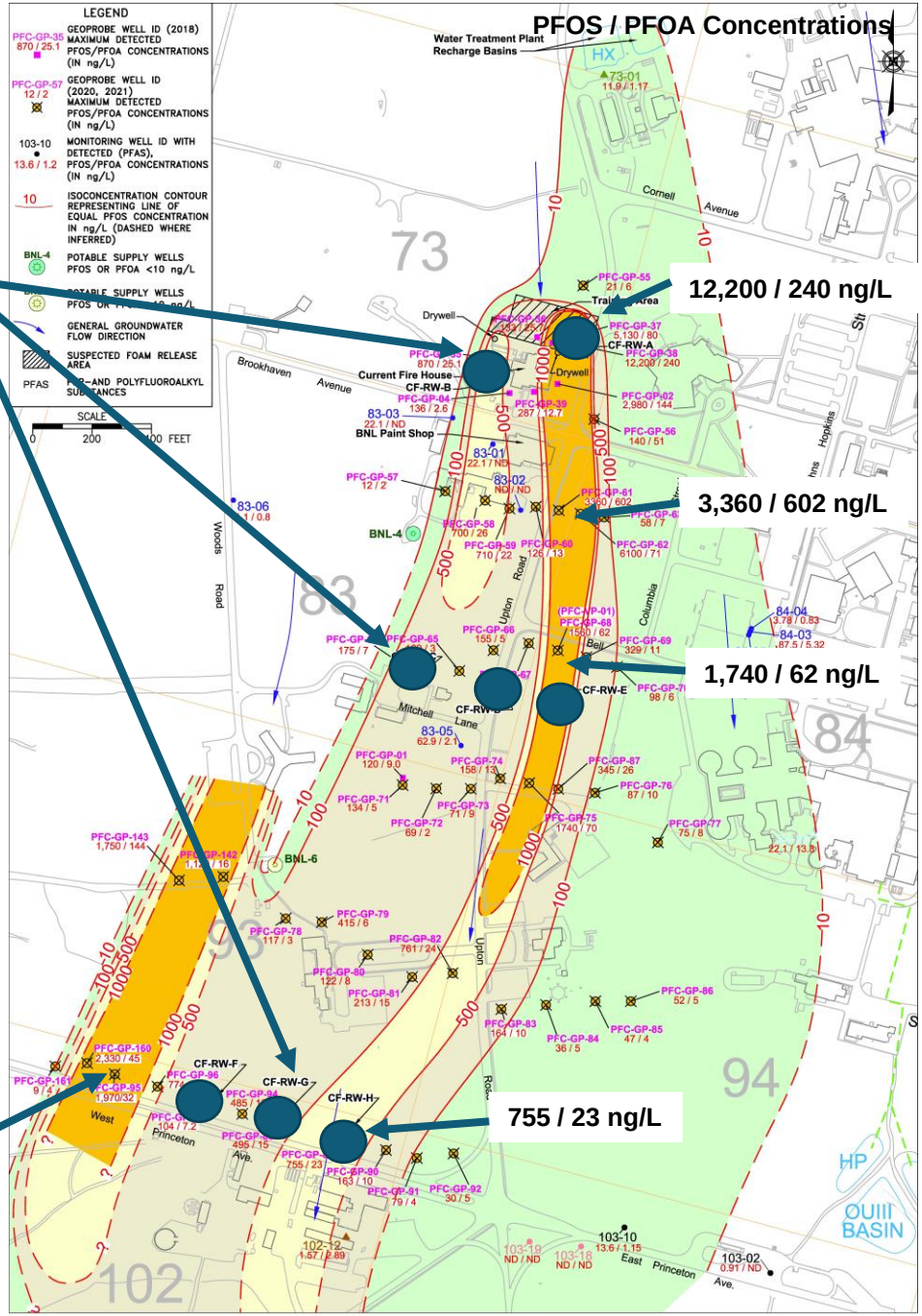
Current Firehouse Plume

- Treatment system design
  - Currently eight extraction wells
  - Capture goal of 100 ng/L for PFOS or PFOA
  - New carbon filters to be installed
- Monitoring
  - Install 54 groundwater monitoring wells
  - Data will be used to verify the effectiveness of the treatment system and monitored natural attenuation

April-July, installed eight additional wells. Detected PFOS up to 2,330 ng/L

Conducting engineering/cost evaluation for adding an additional extraction well to the system



Installation of temporary monitoring wells

Collected samples from multiple depths at each location to determine vertical distribution of PFAS in the aquifer. Typically, at 10 feet intervals to depths of 150 feet

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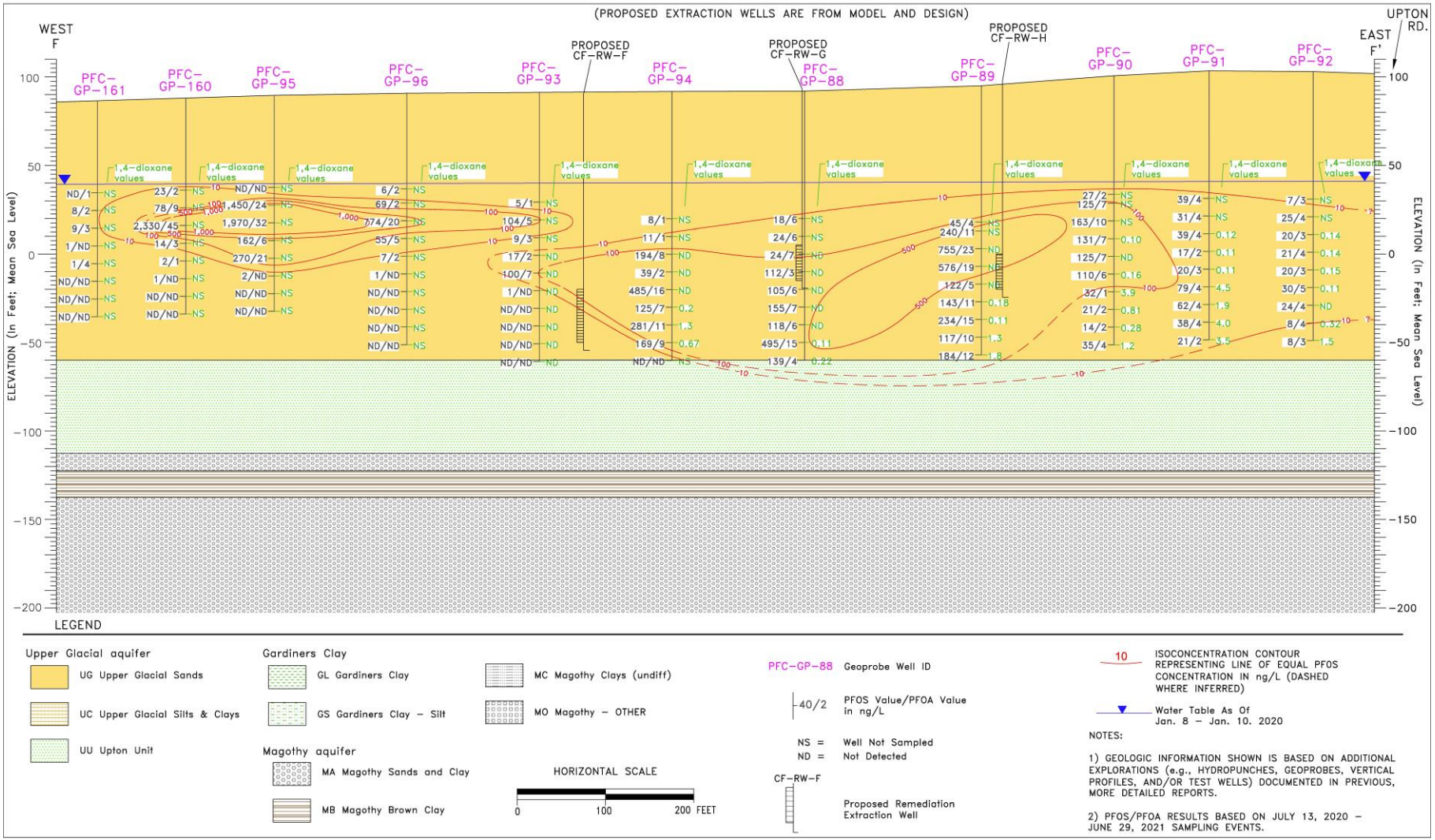
West-East Cross Section Along West Princeton Ave



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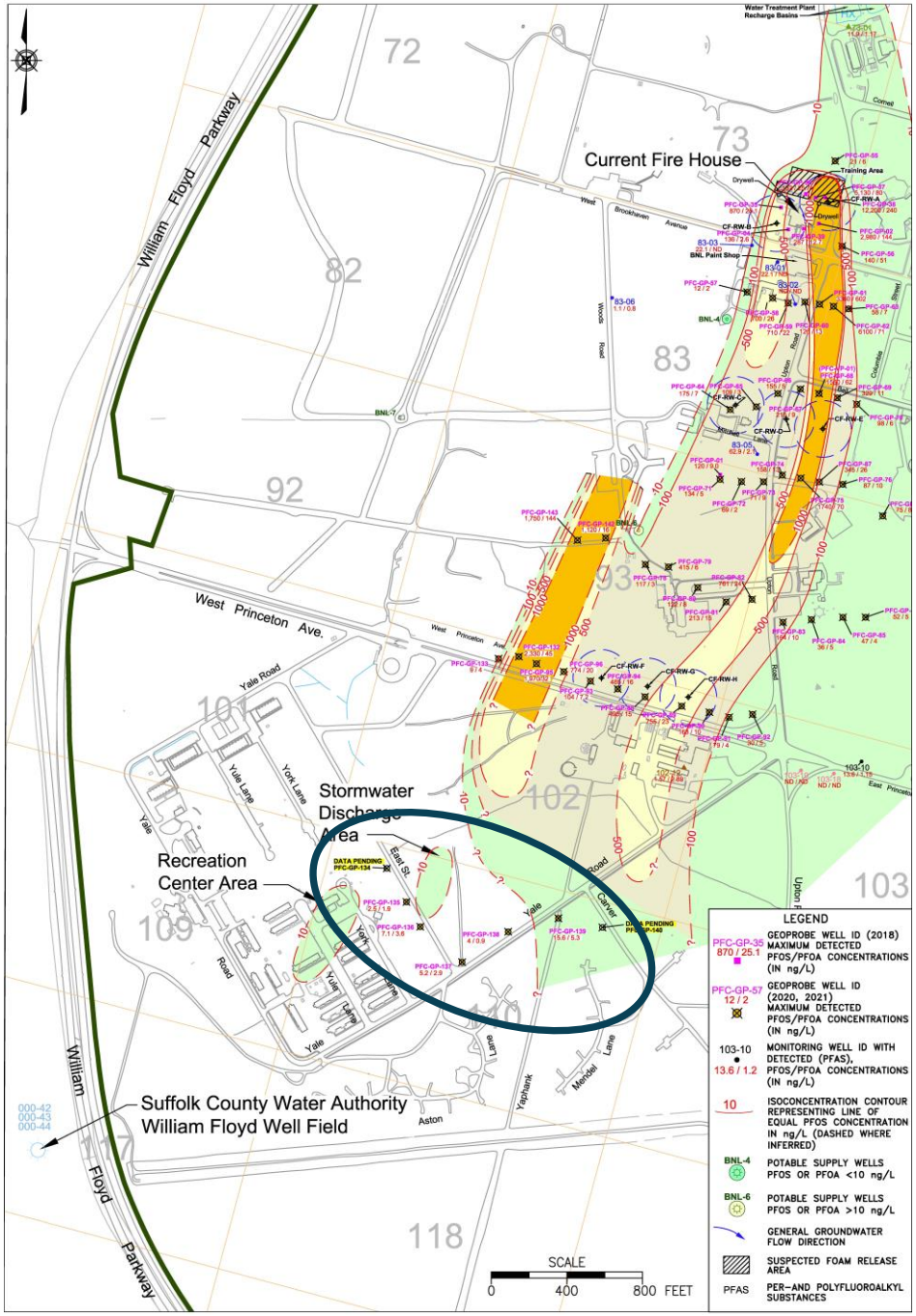
Temporary Wells South of West Princeton Ave. - August

- Installed seven temporary wells (to ~145 feet deep)
- Objective: Evaluate downgradient migration of the high concentration PFAS plume segment and whether the migration pathway is being influenced by SCWA William Floyd well field
  - Low levels of PFOS have been detected in samples from the William Floyd well field*

*Data posted on SCWA Website



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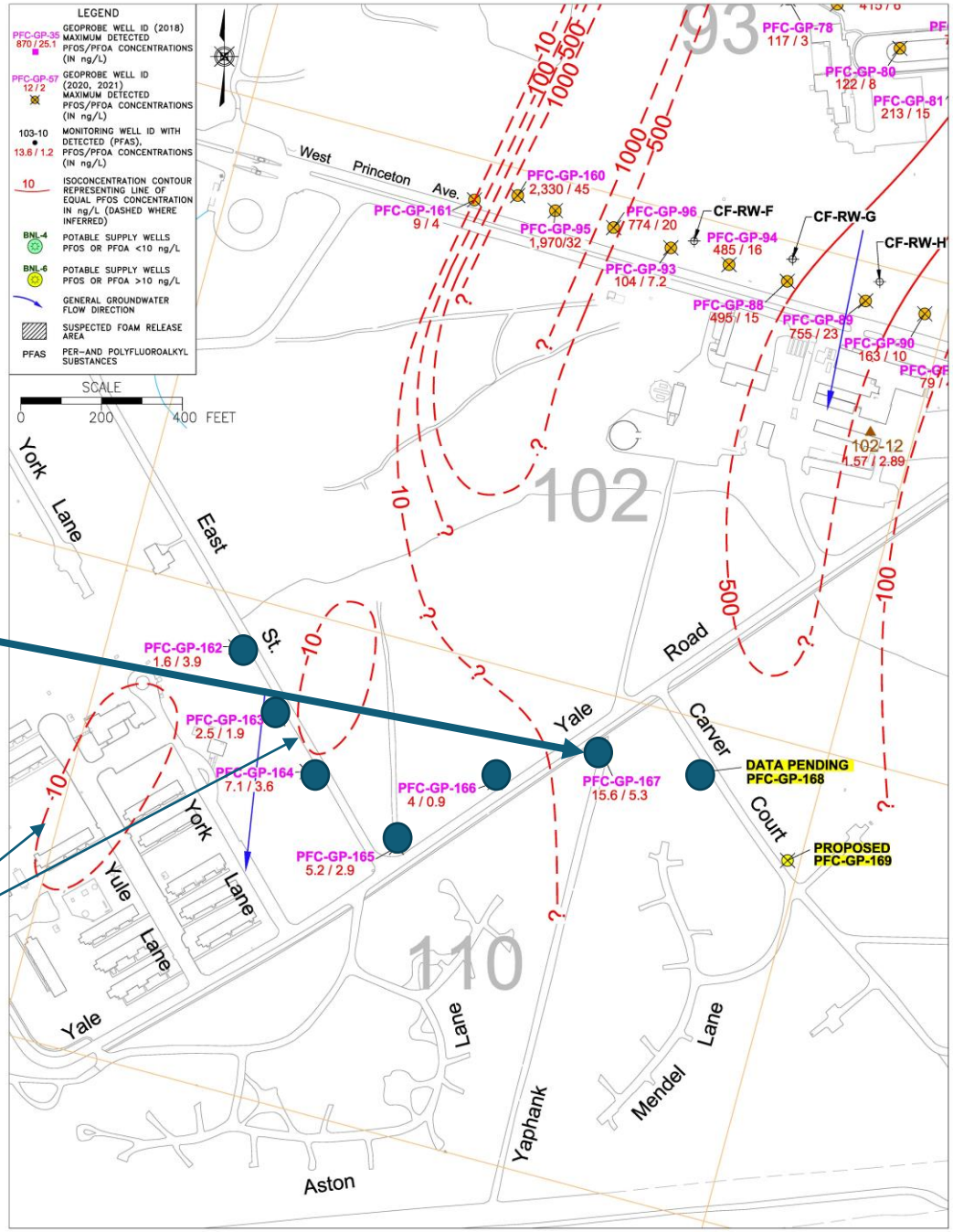
Temporary Wells South of West Princeton Ave.

- **Sample Results**

- PFOS concentrations slightly above the 10 ng/L drinking water standard detected in several samples from well PFC-GP-167
  - Maximum concentration of 15.6 ng/L
- PFOS/PFOA in other wells were <10 ng/L



Contours based upon 2018 data from temporary wells installed near the Recreation Center and stormwater outfall

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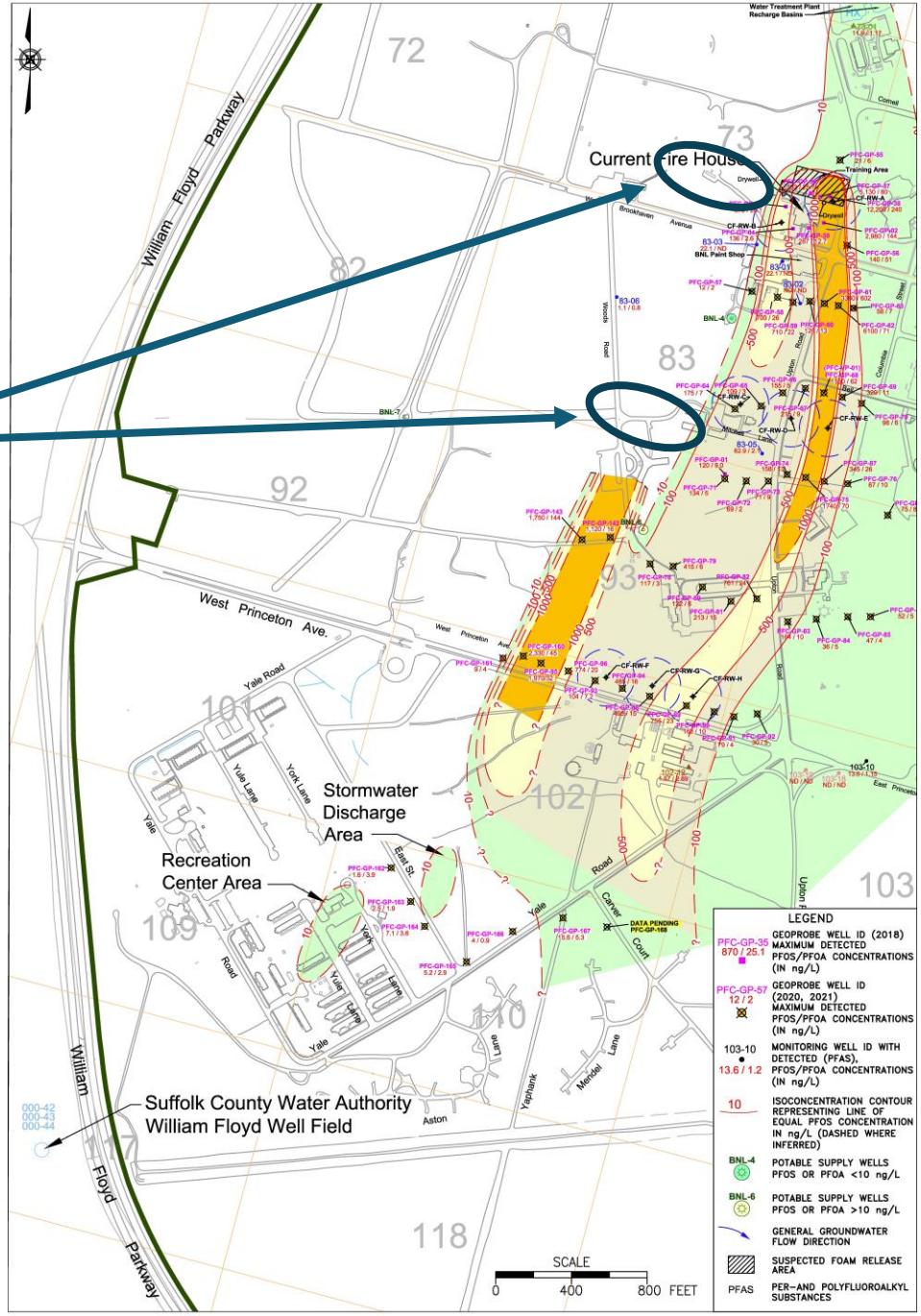
Additional Upgradient Wells

- Find the source of the high concentration plume segment
  - Focus on open field west of the current firehouse - determine whether foam training had been conducted there
    - Three temporary wells have been installed – analytical results are pending



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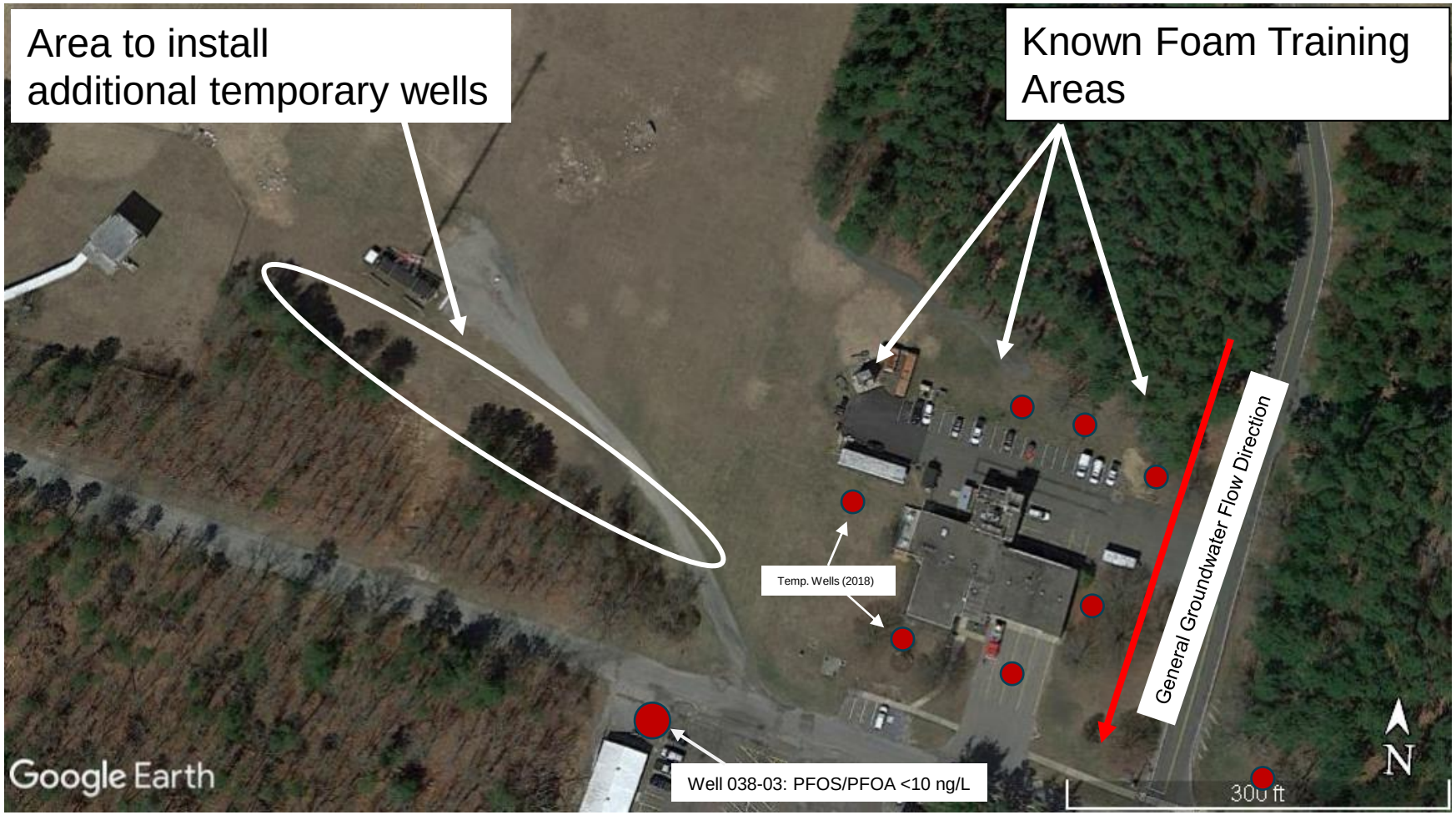
Open Field West of Current Firehouse



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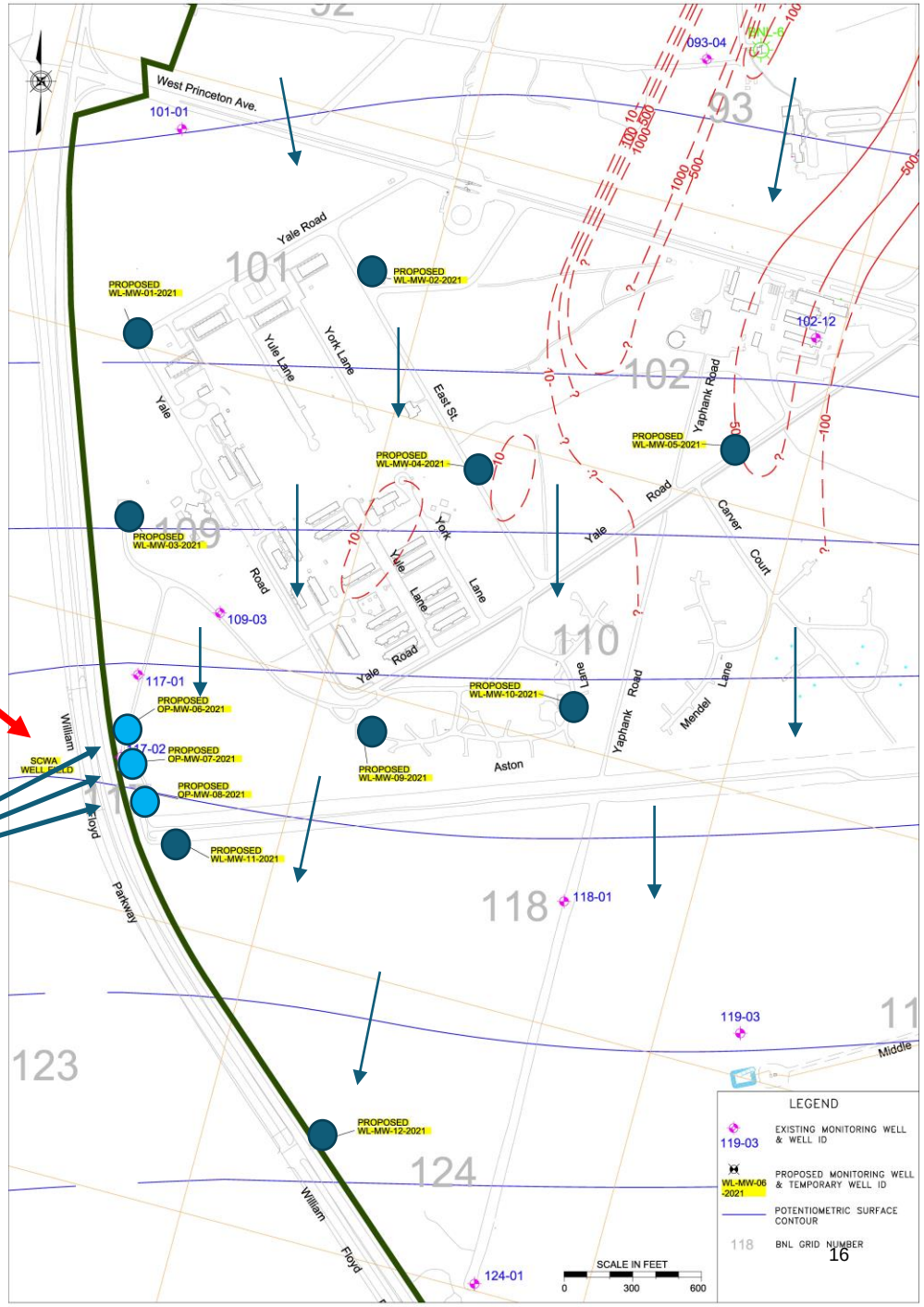
New wells in SW area of BNL

- 12 new wells to provide additional water level data
  - Help evaluate potential influence the William Floyd well field has on groundwater flow
  - 9 new wells for monitoring water levels
  - 3 new “sentinel” wells east of the William Floyd well field:
    - Water levels
    - Water quality surveillance



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Next Steps

- Continue construction work for the two treatment systems
  - Most construction work is expected to be completed by Spring 2022
- Continue to characterize the western portion of current firehouse PFAS plume
  - Determine whether additional extraction wells are needed
- Complete the installation of the new water level wells
  - Evaluate groundwater flow directions using the improved network of wells

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