

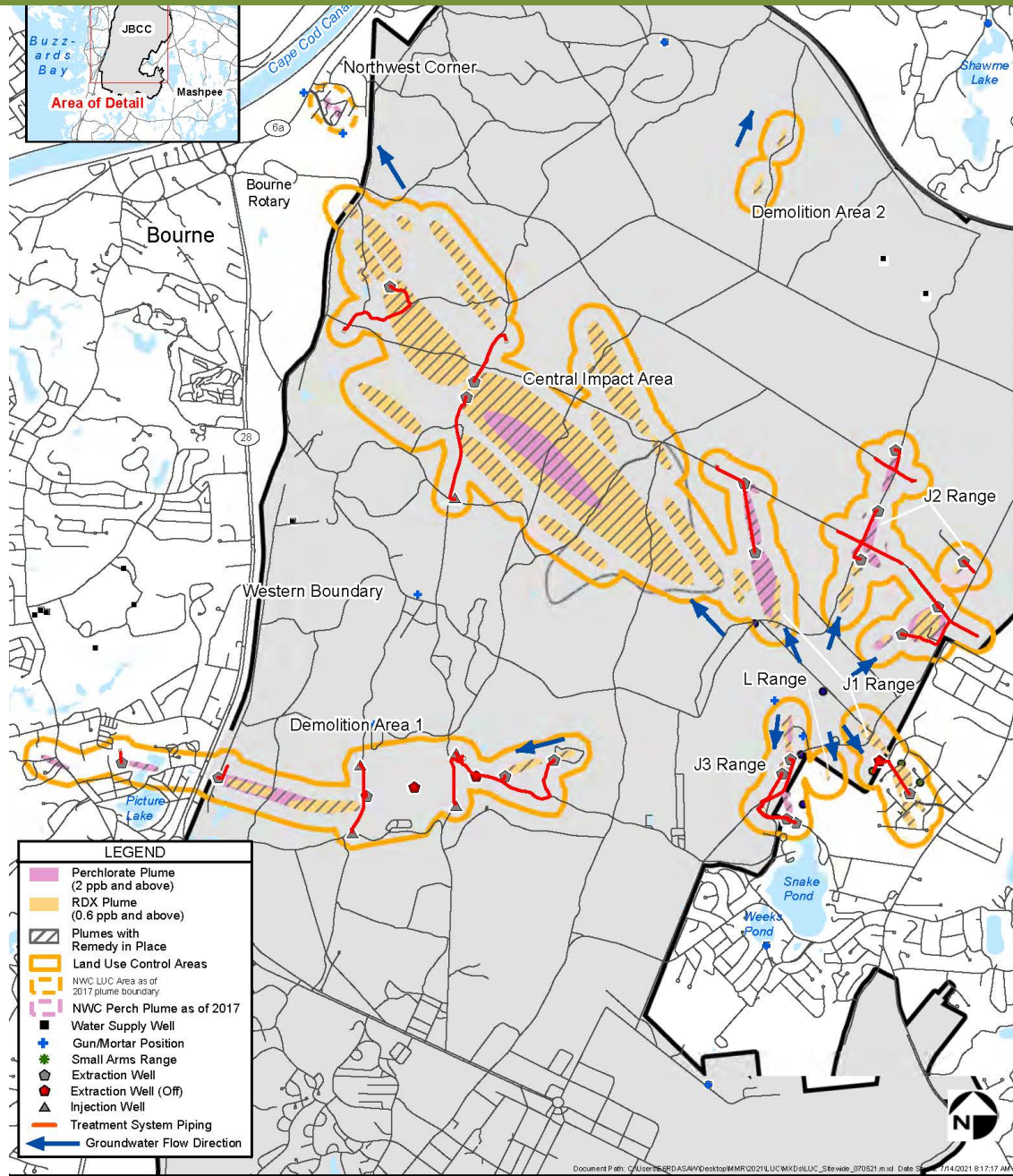


IAGWSP PFAS Investigation Update

JBCC CT Briefing April 13, 2022
Mr. Ben Gregson
Impact Area Groundwater Study Program



IAGWSP Plume Map



Impact Area Groundwater Study Program

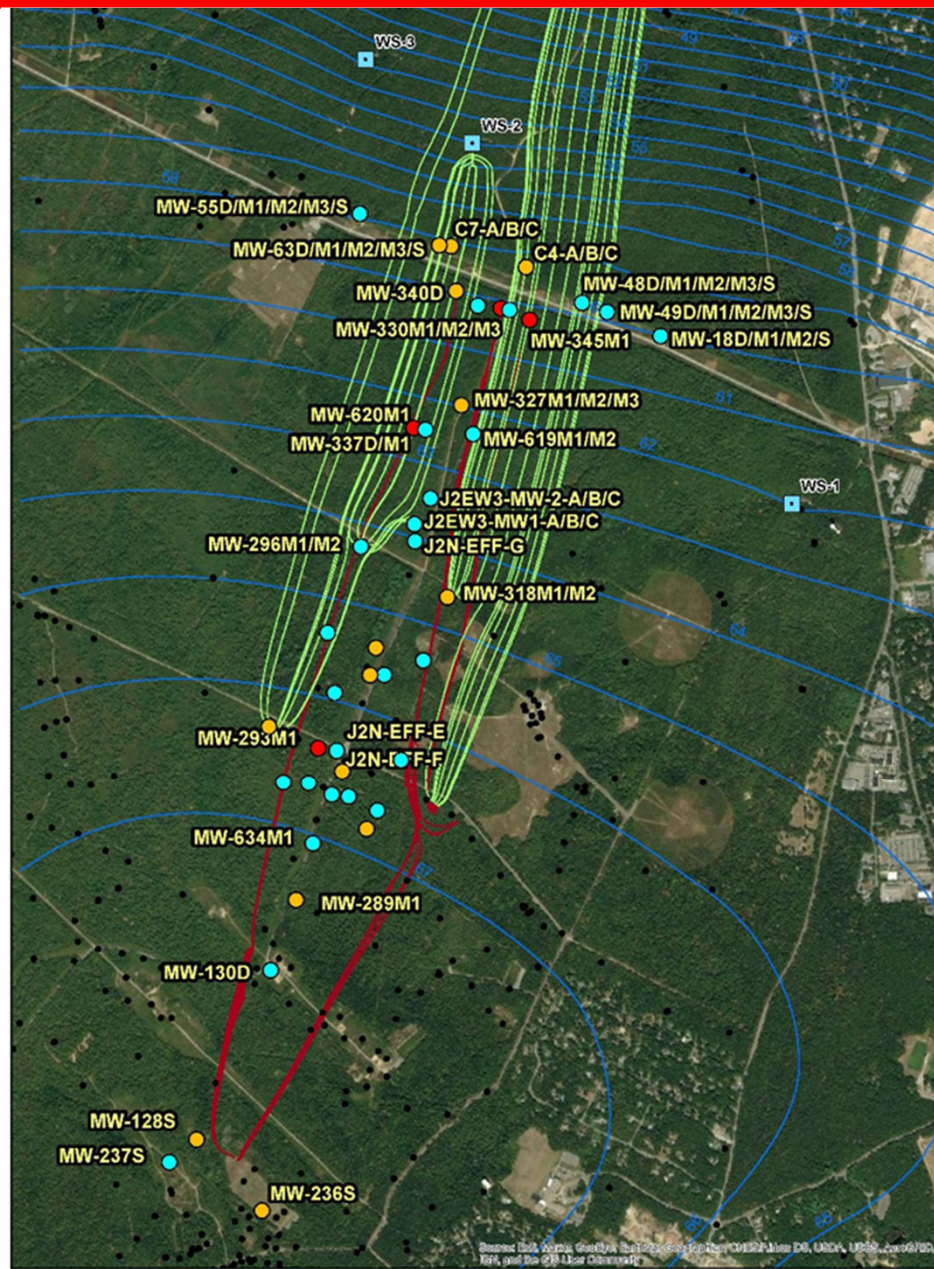
Impact Area Groundwater Study Program
July 2021



PFAS Sampling History

- ◆ **IAGWSP began sampling for PFAS in 2019 at Open Burning/Open Detonation (OB/OD) munitions disposal sites**
 - There is a potential for firefighting foams containing PFAS to have been used at these OB/OD areas. Sites included: Demolition Area 1, and the J Ranges (J-1 Northern, J-2 Northern, J-2 Eastern and J-3 Ranges);
 - If firefighting foams were used at these sites they likely would have been used in conjunction with the OB/OD activities and, therefore, any PFAS compounds that were released would have been co-released with other contaminants associated with those activities;
 - The administrative record does not indicate that foams were used at these areas, but references to the fire department conducting inspections of government contractors as well as being present during destruction activities is mentioned.

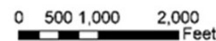
- ◆ **Results are compared to EPA's Health Advisory (PFOS + PFOA) of 70.0 nanograms per liter (ng/L) and MassDEP's GW-1 Massachusetts Maximum Contaminant Level (MMCL) standard (for the sum of the concentrations of six specific PFAS: PFOS, PFOA, PFHxS, PFNA, PFHpA, and PFDA aka PFAS6) of 20.0 ng/L**



- Supply Wells
- MassDEP PFAS6 greater than 20 ng/L *
- MassDEP PFAS6 less than 20 ng/L
- PFAS ND
- Existing Monitoring Wells
- Forward Particle Paths from Infiltration Trenches
- Reverse Particle Paths from Existing Wells
- Predicted Groundwater Levels

*All PFOS + PFOA less than EPA HA of 70 ng/L

Figure 1
PFAS Sampling Results
J2 North
 March 14, 2022





PFAS 2021 Sampling Results – J-2 Range

- ◆ **Wells near J2EW0002 were non-detect.**
- ◆ **Wells at Gibbs Road showed detections above the MassDEP PFAS6 MMCL.**
 - MW-330 had detections in all screens, 55.8 ng/L, 21.6 ng/L, 44.0 ng/L and 32.0 ng/L.
 - MW-345M1 had a detection of 72.4 ng/L and MW-340D had a detection of 32.0 ng/L
 - These wells are approximately 3.5 years travel time upgradient of Upper Cape Water Supply Well #2.
 - Upper Cape Water Supply superintendent was notified of the results; they have not seen PFAS compounds in recent sampling of their downgradient well WS-2.



PFAS Update on J-2 Range Next Steps Presented December 2021

◆ *Resample Wells along Gibbs Road to confirm detections.*

➤ **Wells were resampled, results were lower for PFAS6 (PFDA, PFNA).**

Well Number	Previous Sample Result	December 2021 Sample Result
MW-330M1	55.8 ng/L	27.2 ng/L
MW-330M2	21.6 ng/L	9.8 ng/L
MW-330M3	44.0 ng/L	20.5 ng/L
MW-340D	32.0 ng/L	16.5 ng/L
MW-345M1	72.4 ng/L	24.0 ng/L

◆ *Sample sentry wells for Water Supply Well 2.*

➤ **PFAS6 (PFDA, PFNA) detected in all six screens between 2.2 and 5.9 ng/L (<PFAS6 of 20 ng/L).**

◆ *Sample MW-18, MW-48, MW-49, and MW-63 to the east and west of the detections.*

➤ **Sampled these wells (total of 23 screens): all non-detect except MW-63M2 at 2.2 ng/L (PFDA)**



PFAS Update on J-2 Range Next Steps Presented December 2021 (cont.)

- ◆ *Sample the wells between the treatment systems and Gibbs Road: MW-327, MW-337, MW-130, MW-289, MW-293, MW-296, MW-318, MW-634, MW-619, J2EW3-MW1, J2EW3-MW2 and J2EW3-MW3.*
 - **MW-327, MW-289 and MW-318: PFAS6 < 20 ng/L.**
 - **MW-293 and MW-337: PFAS6 > 20 ng/L (34.0 and 42.0 ng/L in deepest screens, respectively).**
 - **All other wells non-detect.**

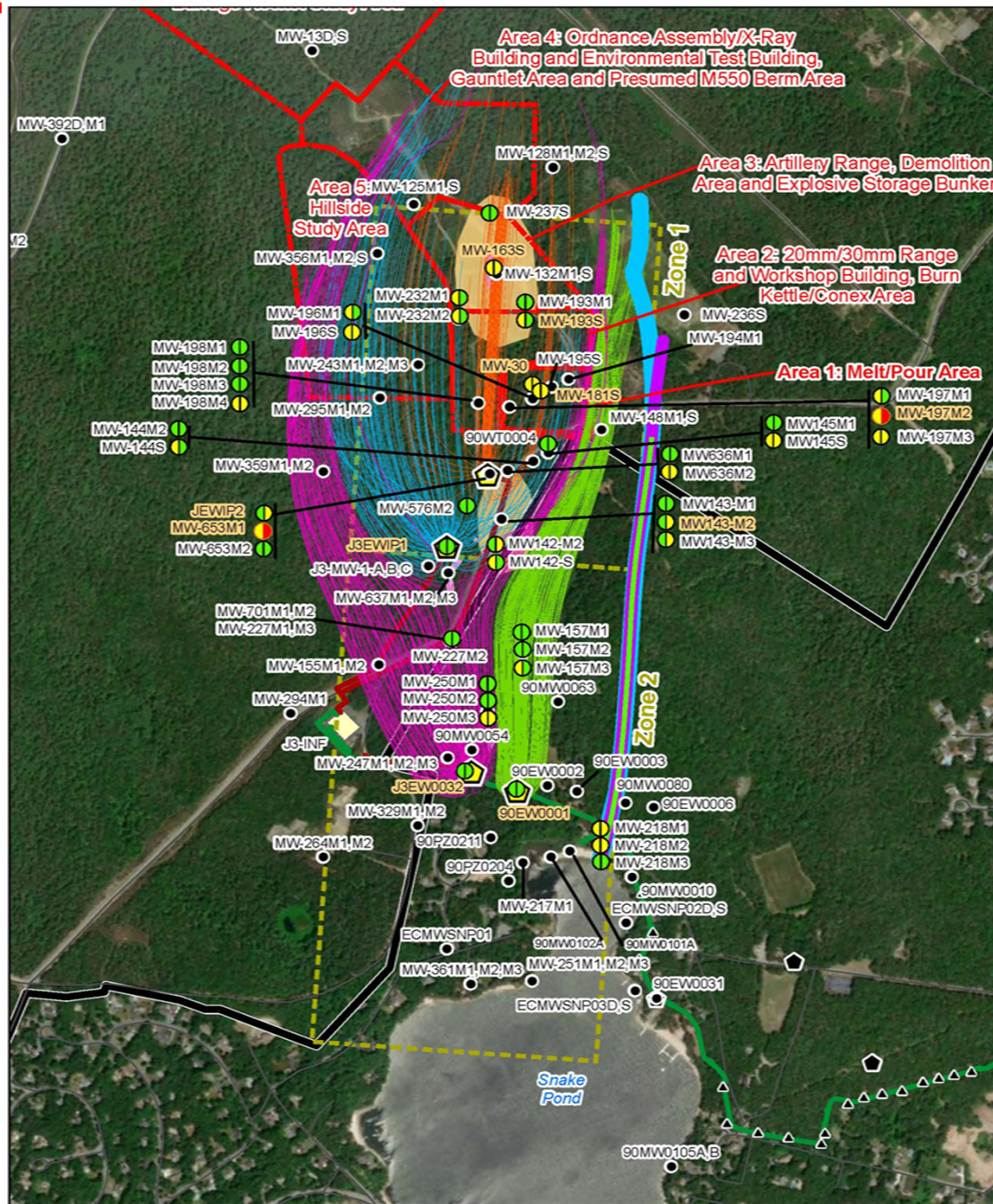
- ◆ *Sample MW-128S, MW-236S and NW-237S at the top of the groundwater mound based on particle backtracks from deep Gibbs Road detections.*
 - **MW-237: non-detect.**
 - **MW-128 and MW-236: PFAS6 <20 ng/L.**

- ◆ *Sample effluent from Mobile Treatment Units E and F and Treatment Plant G.*
 - **Effluent from all non-detect.**



J-2 Sampling Next Steps

- ◆ Additional wells will be sampled to define the nature and extent of PFAS.
- ◆ Proposed sampling locations to include existing wells and new locations



- LEGEND**
- 90EW0001 Capture Zone Particle Tracks
 - J3EW0032 Capture Zone Particle Tracks
 - J3EWIP1 Capture Zone Particle Tracks
 - J3EWIP2 Capture Zone Particle Tracks
 - J3 Study Area
 - Perchlorate Plume (shown to 2 µg/L)
 - RDx Plume (shown to 0.6 µg/L)
 - FS-12 Extraction Well (operational)
 - J-3 Extraction Well (operational)
 - Reinjection Well (operational)
 - Monitoring Well Wells Proposed for 2022 PFAS Sampling
 - Influent Piping
 - Effluent Piping
 - Treatment System
 - Reverse Particle Pathlines 2020 Operational Conditions
 - MW-218M1
 - MW-218M2
 - MW-218M3
- Max PFAS Most Recent Sample**
 EPA LHA (sum of PFOA and PFOS) (ng/L)
- EPA LHA ≥ 70 ng/L
 - EPA LHA < 70 ng/L
 - EPA LHA No Detection
- MassDEP (sum of PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA) (ng/L)
- MassDEP ≥ 20 ng/L
 - MassDEP < 20 ng/L
 - MassDEP No Detection



TITLE

J-3 Range Environmental Monitoring
2022 PFAS Proposed Sampling



PFAS 2021 Sampling Results – J-3 Range

◆ J-3 Range

- Concentrations in MW-197 at the J-3 Range were like previous detections just over the MassDEP PFAS6 (MMCL). However, at well MW-218, MassDEP PFAS6 was 597 ng/L and the EPA number was 120 ng/L (which was just PFOA). Detections in the mid-screen were several times lower, less than EPA standard but still above the MassDEP PFAS6 standard).
- Chemist review of the MW-218 data observed that non-settled particles clogged the solid phase extraction column and the samples that had high particulates were those that had the highest PFAS detections.



PFAS Update on J-3 Range Next Steps Presented December 2021

- ◆ *Sediment from well MW-218 is being analyzed and results are pending.*
 - **Sediment only results were non-detect for PFAS6 (note sediment reported in micrograms per kilogram).**

- ◆ *Review particle backtracks, well construction logs, observations during sampling, AFCEC data, Snake Pond data.*
 - **MW-218 resampled results (with the sediment removed) showed a significant reduction: MassDEP PFAS6 was 17.5 ng/L and EPA was 5.7 ng/L.**
 - **Particle backtrack from well MW-218 originated at L Range. Three water table wells sampled in this area MW-128S and MW-236S <20 ng/L PFAS6. MW-237s was non detect. Other wells did not exhibit turbidity during sampling.**
 - **AFCEC does not have PFAS data in the FS-12 area and Snake Pond results were non-detect/low levels.**



PFAS Update on J-3 Range Next Steps Presented December 2021 (cont.)

- ◆ *Additional wells have been identified for sampling both upgradient and downgradient of MW-218.*
 - **A proposal for additional sampling has been submitted to EPA and MassDEP.**



J-3 Sampling Next Steps

- ◆ The working Conceptual Site Model (CSM) suggests that some of the PFAS may be comingled with the existing HMX groundwater plume related to the former Melt/Pour Area.
- ◆ The elevated PFAS concentrations appear to be captured at either extraction well J3EWIP1 or J3EWIP2. This is further supported by the fact that low concentrations of PFAS6 were detected in water samples collected at extraction well J3EWIP2 (2.8 ng/L) and influent water at the FS-12 treatment plant (0.52 ng/L). PFAS6 was not detected in effluent water samples at the treatment plant suggesting the PFAS is being treated.
- ◆ Additional samples will be collected to confirm the nature and extent and how PFAS are being captured by the treatment systems.