Barnes Air National Guard (ANG) Base Restoration Advisory Board Meeting #11
April 24, 2025

Agenda

6:00 PM	Agenda Review and Meeting Logistics
6:05 PM	Welcome and Introductions
6:10 PM	RAB Business
6:15 PM	TAPP Presentation
6:50 PM	Environmental Restoration Program Status Update
7:15 PM	Questions and Comments
7:25 PM	Closing Remarks
7:30 PM	Adjourn

Meeting Logistics

Amy Brand

Jacobs

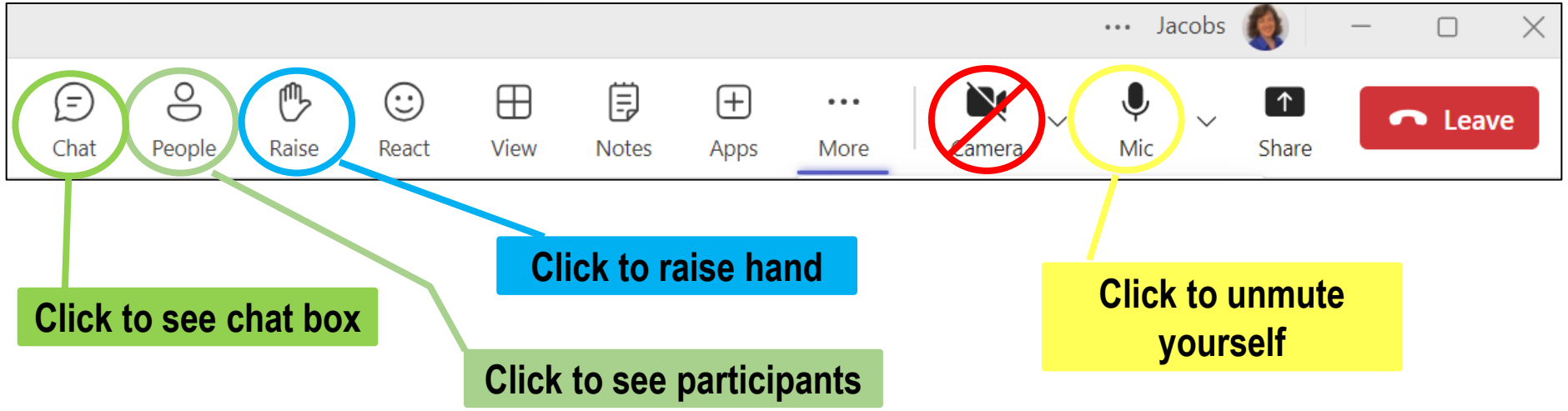
RAB Facilitator

Meeting Guidelines

- RAB Members
  - Ask questions at the end of each topic
  - Raise hand to be called on to speak
  - Introduce yourself so that everyone (in room and online) knows who is speaking
  - Please observe a 2-minute limit to enable other RAB members to participate.
- Public Participants
  - Hold questions to the end of the meeting
  - In the room, raise hand and introduce yourself when called on
  - Online, submit questions through the “chat feature”
  - Questions will be read and addressed at the end of the meeting

MS Teams - Computer

- Camera – Turn OFF to save bandwidth – presentation will be on screen
- Participants – On the lower right, click on **Participants** to open panel
- To ask a question:
  - RAB Members - **Raise hand** to be called on to speak, unmute yourself when called on
  - Public participants – Use **Chat** to type your question



MS Teams Basics – Telephone Participants

- Follow along on the slide presentation (emailed or download from 104th Fighter Wing website at https://www.104fw.ang.af.mil/About/Restoration-Advisory-Board/
- Use your phone mute button when not speaking
- Dial *5 to raise hand to be called on to speak after the presentation
  - Use *6 or your phone mute button to unmute and identify yourself when asking a question or making a comment
- Any RAB members using a phone? Please identify at beginning of meeting

Welcome and Introductions

Jane Oksin (for Kathy Hillman, Community Co-Chair)

Col. Michael Glass (for Col. David Halasi-kun, Base Co-Chair)

Welcome and Introductions

Air National Guard Team	
Col. David Halasi-kun (Base Co-Chair)	Robert Lewis, National Guard Bureau
Jennifer Baker, 104th FW Environmental Coordinator	Contractors: BB&E, Jacobs (Amy Brand, RAB facilitator)
Community RAB Members	
Kathleen Hillman, Community Co-Chair	Mary Ann Babinski
Chris Clark	Sandi Gil
Kristen Mello	Mary O'Connell
Jane Okscin	Representative Kelly Pease
Dawn Thomas	Senator John Velis
Regulatory Contact	
Caprice Shaw, Massachusetts Department of Environmental Protection (MassDEP)	

Welcome and Introductions

U.S. Army Corps of Engineers (USACE) Team	
Amanda Martin, Project Manager/ Technical Lead	Grace Greenberg, Risk Assessor
Jennifer Apell, PhD, Project Chemist	Mike Narcisi, Wetland Ecologist/Soil Scientist
Dan Folan, PhD, PG, LSP, Geologist/Hydrogeologist	Whitney Sauvé, PE, Environmental Engineer
SRS-Battelle JV Team (USACE Contractor)	
Andrew Barton, Battelle, Project Manager	James Griffin, SRS, Deputy Project Manager
Max Zelenevich, Field Lead	
Chloeta (Technical Assistance for Public Participation Advisory)	
Emily Hoskin, Advisor	

RAB Business

Amy Brand, Jacobs
Robert Lewis, National Guard Bureau
Emma Kosub, Dawson

Approve Meeting Summary

- Comments on draft meeting summary from January 2025?
- Approval
- Posted on the 104th FW website: https://www.104fw.ang.af.mil/About/Restoration-Advisory-Board/

Barnes ANGB CIP Update

- Current Activities
  - Preparation of Draft Final CIP
  - Community interview process completed
  - Community interview results will be incorporated into the CIP update
- Upcoming Activities
  - RAB Review of Draft Final CIP, anticipated in early Summer 2025

Points of contact for Barnes ANGB

Public Affairs Officer

Jerry Hewitt jerry.hewitt@us.af.mil

Support Contractor Point of Contact

Emma Kosub: ekosub@dawsonohana.com

TAPP Contracting Activities/Milestones

Process

1. Acquisition Strategy: 1) Sole Source to University; 2) Sole Source to Alternate Provider; 3) Competitive Solicitation

2. Performance Work Statement (PWS) and Independent Government Cost Estimate (IGCE) for approved TAPP Grant

3. Deliverables: Technical Report to RAB, Briefing to RAB on findings with recommendations and next steps in CERCLA process

4. Acquisition Schedule/Milestones to get to award (TBD-Need funding availability letter from AFCEC to proceed with contract action)

Status of funding for TAPP grant #3:

- AFCEC issued a Funding Assurance Letter (FAL)
- Working on PWS and contracting package

Upcoming Meetings

- Dates
  - Fourth Thursday of the month, every 3 months: January, April, July, October
  - Adjustments to be made when needed
  - Upcoming meetings: July 24, 2025
    October 23, 2025
    January 29, 2026 (note, 5th Thursday)

RAB Member Discussion

- Please raise your hands and unmute yourself when recognized.
- Introduce yourself at the beginning of your question or comment.
- Please limit questions to 2 minutes to give other RAB members an opportunity to participate.

UNDERSTANDING HEALTH IMPLICATIONS WITH SITE CONTAMINANTS AND EXPOSURE ASSOCIATED PFAS

Independent Technical Assistance for Barnes Air National Guard Base Restoration Advisory Board

April 25, 2025

Presenter: Emily Hoskin

Prepared by: Chloeta

CONTENTS

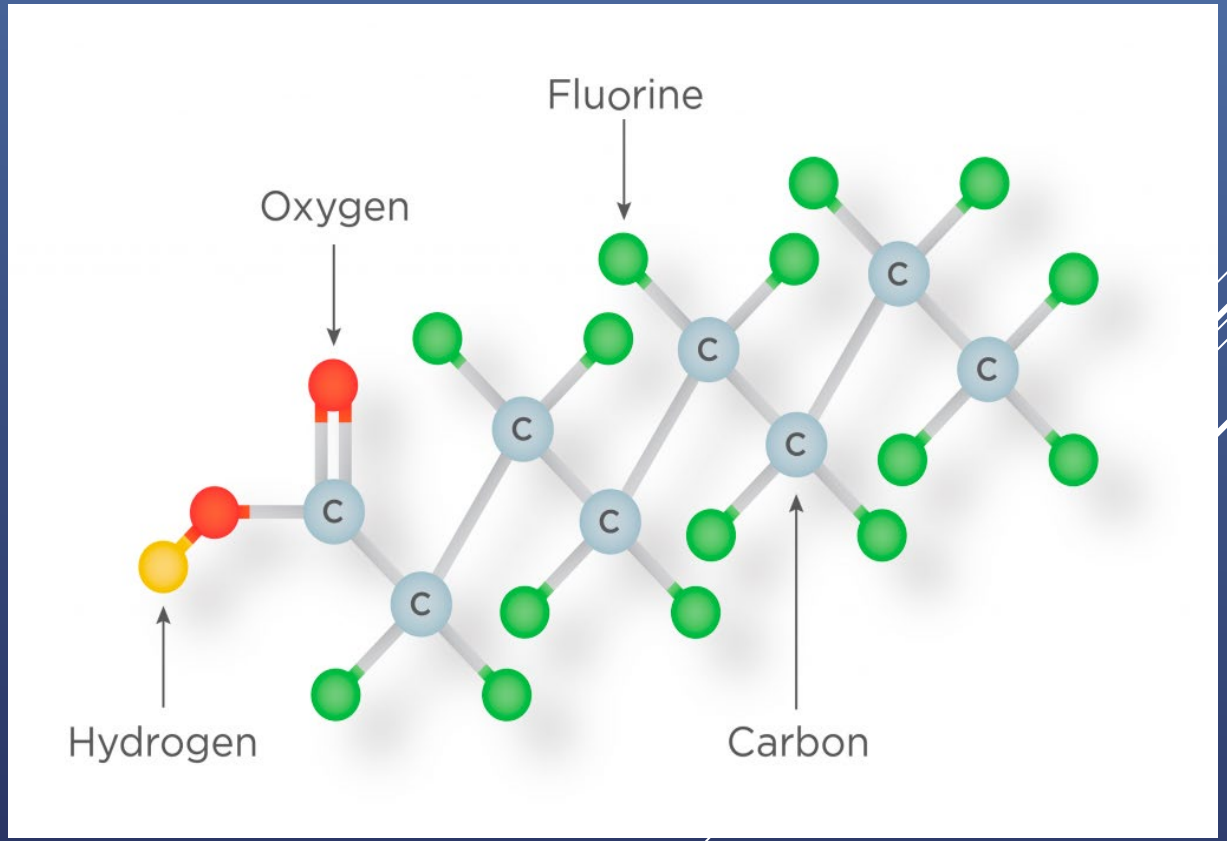
List of Acronyms	
ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Centers for Disease Control and Prevention
EPA	Environmental Protection Agency
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
NHANES	National Health and Nutrition Examination Survey
PFAS	Per-and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PFDA	Perfluorodecanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PFNA	Perfluorononanoic Acid
HFPO-DA	Hexafluoropropylene Oxide Dimer Acid
SIR	Standardized Incidence Ratio

PFAS HISTORY

- **1940s:** Manufactured chemicals used globally since the 1940s.
- **1980s:** Toxicity studies suggested potential health effects in humans.
- **2000:** Manufacturers voluntarily began phasing out perfluorinated compounds.
- **2006:** PFAS detected in drinking water east of St. Paul, MN.
- **2007:** CDC included PFAS in NHANES testing.
- **2009:** EPA issued a drinking water health advisory.
- **2016:** Health advisories set a 70 ng/L combined limit for PFOA and PFOS.
- **2017:** ATSDR added several PFAS to the substance priority list.
- **2019:** CDC/ATSDR began assessments near current/former military installations
- **2024**: EPA published MCL 5 PFAS compounds

WHAT ARE PFAS?

- There is no universally accepted definition.
- Defined by a strong carbon-fluorine bond.
- Highly persistent in the environment, animals, and humans.
- Accumulate over time, posing potential health risks.



HOW LONG DO PFAS STAY IN THE BODY?

	Humans	Nonhuman Primates	Rats	Mice
PFOA	2.1 - 10.1 years	20.1 - 32.6 days	Males: 44 – 332 hours Females: 1.9 – 16.2 hours	
PFOS	3.3 - 27 years	110 – 170 days	179-1,968 hours	731 – 1,027 hours
PFHxS	4.7-35 years	87 – 141 days	Males: 382 – 688 hours Females: 33.6 – 58.6 hours	597 – 643 hours
PFNA	2.5 – 4.3 years		Males: 710 – 1,128 hours Females: 33.6-58.6 hours	619.2 – 1,653 hours
PFBS	665 hours	8.0 – 95.2 hours	2.1 – 7.42 hours	
PFBA	72 - 81 hours	40.3 – 41.0 hours	1.03 – 9.22 hours	2.79 – 13.34 hours

PFAS SOURCES

Global PFAS Contamination:

- Detected in remote areas, including the Arctic and Antarctic seas.
- Extensive use has resulted in widespread environmental contamination.

Industries Contributing to PFAS Pollution:

- Textile manufacturing, paper food wrapping, metal plating/etching, and wire manufacturing.
- Pesticides, personal care products, and nonstick cookware.
- Released into air, water, and soil, settling over time.
- Found at firefighting facilities due to foam usage.
- Released into groundwater via defective landfill or wastewater liners.

Prevalence in Household Items:

- Carpets, cookware, dog food containers, and food packaging.

Occupational Exposure to PFAS:

- High exposure among manufacturing workers producing PFAS-containing materials.
- Elevated risks for firefighting foam-related jobs and those in food packaging within the hospitality sector.

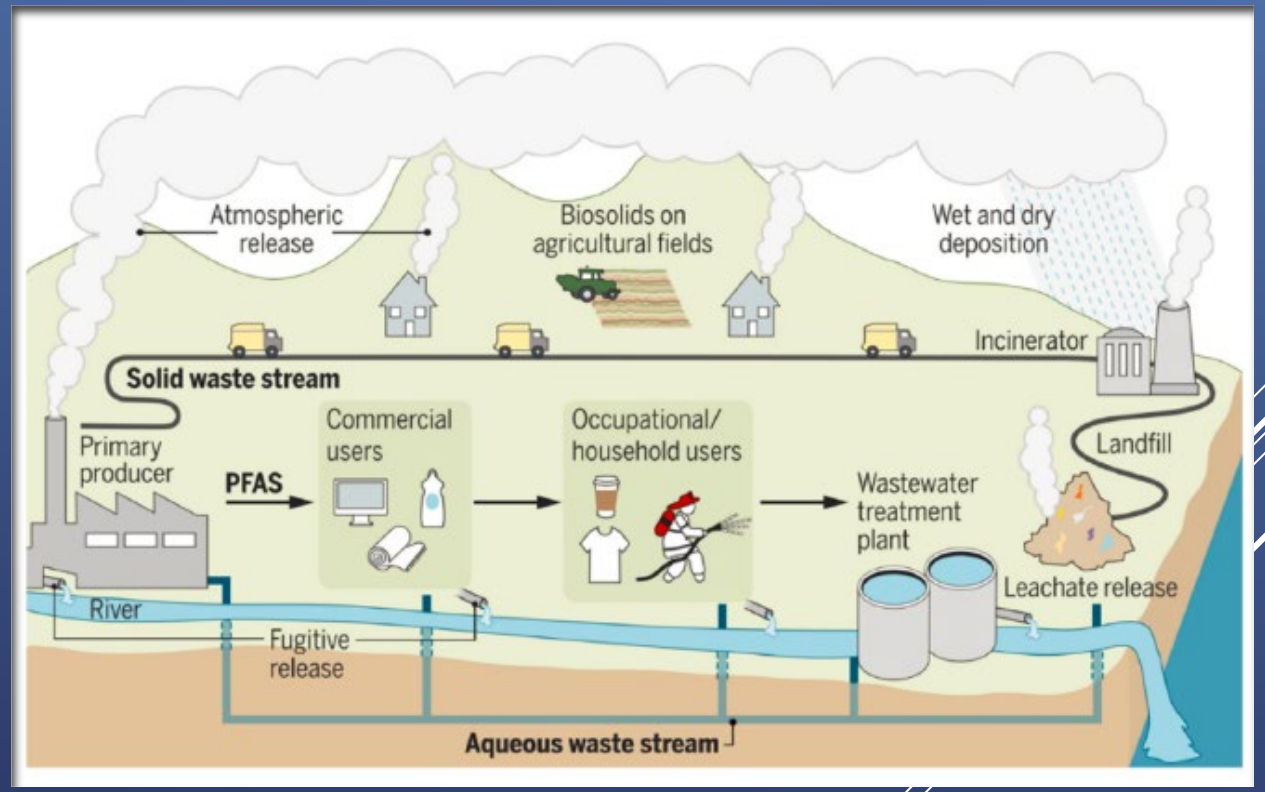
MOVEMENT THROUGH THE ENVIRONMENT

Waterway Contamination:

- PFAS can contaminate public water systems and private wells.
- Contaminated compost or biosolids, derived from sewage sludge, linked to agricultural produce contamination.

PFAS in the Food Chain:

- PFAS bioaccumulate due to exposure to contaminated water and food sources.
- Bioaccumulation: Gradual buildup of substances (e.g., pesticides and chemicals) within an organism.
- Occurs when absorption exceeds elimination through catabolism and excretion.
- Leads to increased concentrations within organisms over time.



PATHWAYS OF PFAS EXPOSURE IN HUMANS

Primary Pathways of PFAS Exposure:

- Ingestion:
  - Drinking contaminated water.
  - Consuming food contaminated through the environment or cookware.
  - Ingesting dust containing PFAS.

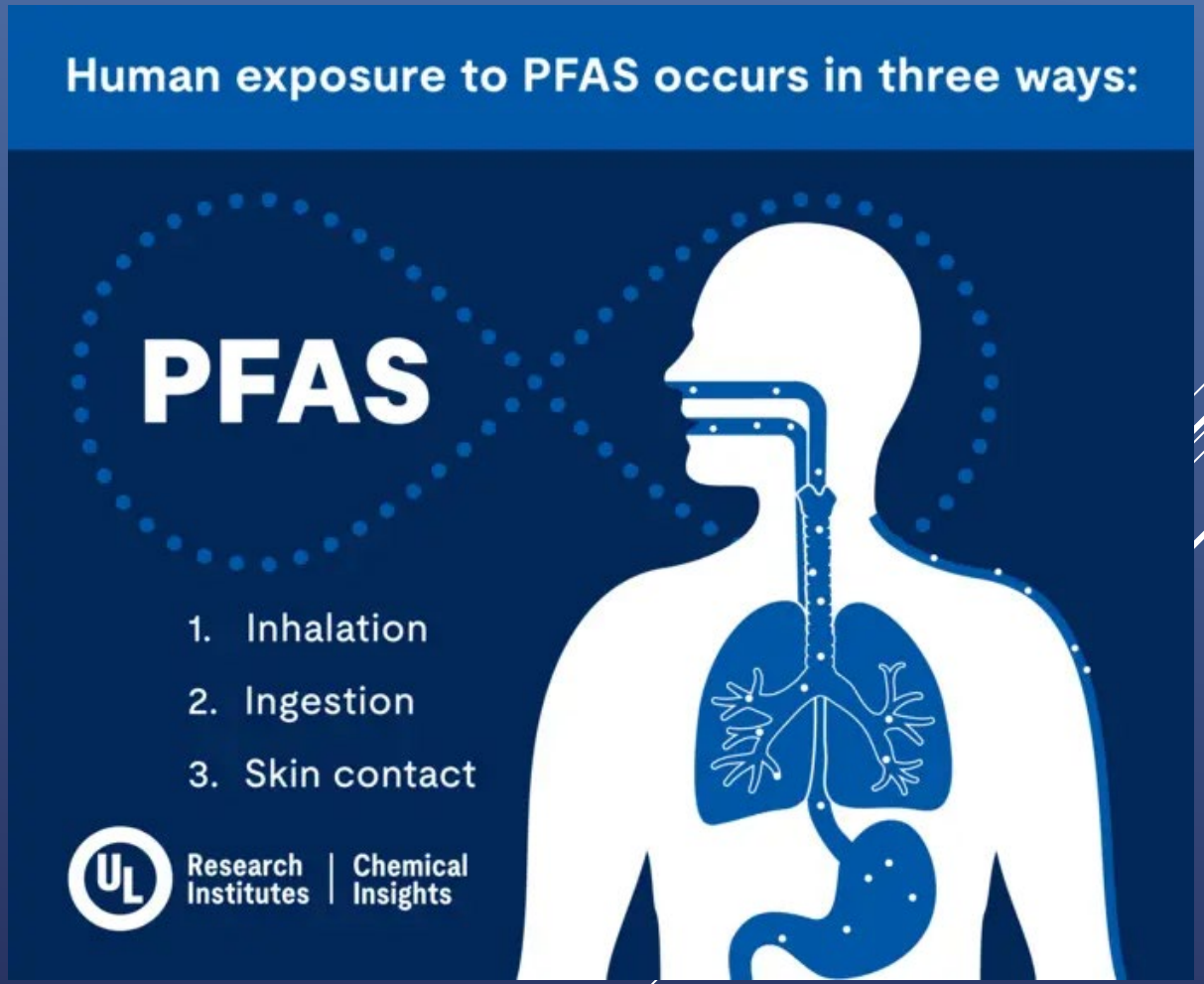
Less Studied Pathways:

- Inhalation and transdermal absorption.
- Commonly occur in occupational settings where aerosolized PFAS are used.
- Factory emissions and incinerators impact surrounding communities.

Challenges in Understanding Exposure:

- PFAS found in countless products.
- Many exposure pathways remain unidentified.

A full understanding of exposure and health impacts will take years.



CURRENT MCL DRINKING WATER LIMITS

Compound	Final MCLG	Final MCL (enforceable levels)[1]
PFOA	Zero	4.0 parts per trillion (ppt) (also expressed as ng/L)
PFOS	Zero	4.0 ppt
PFHxS	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
HFPO-DA (commonly known as GenX Chemicals)	10 ppt	10 ppt
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard index	1 (unitless) Hazard index

[1]Compliance with MCLs is determined by running annual averages at the sampling point.

NHANES LOWER LIMIT OF DETECTION (LLOD, IN NG/ML) FOR EACH PFAS

Variable Name	Analyte Description	LLOD
LBXPFDE	Perfluorodecanoic acid (PFDeA) (ng/ml)	0.10
LBXPFHS	Perfluorohexane sulfonic acid (PFHxS) (ng/ml)	0.10
LBXMPAH	2-(N-methylperfluoroctanesulfonamido) acetic acid (Me-PFOSA-AcOH) (ng/ml)	0.10
LBXPFNA	Perfluorononanoic acid (PFNA) (ng/ml)	0.10
LBXPFUA	Perfluoroundecanoic acid (PFUA) (ng/mL)	0.10
LBXNFOA	n-perfluorooctanoic acid (n-PFOA) (ng/ml)	0.10
LBXBFOA	Branch perfluorooctanoic acid isomers (Sb-PFOA) (ng/ml)	0.10
LBXNFOS	n-perfluorooctane sulfonic acid (n-PFOS) (ng/ml)	0.10
LBXMFOS	Perfluoromethylheptane sulfonic acid isomers (Sm-PFOS) (ng/ml)	0.10

SUMMARY OF PFAS LEVELS IN WESTFIELD'S WELLS

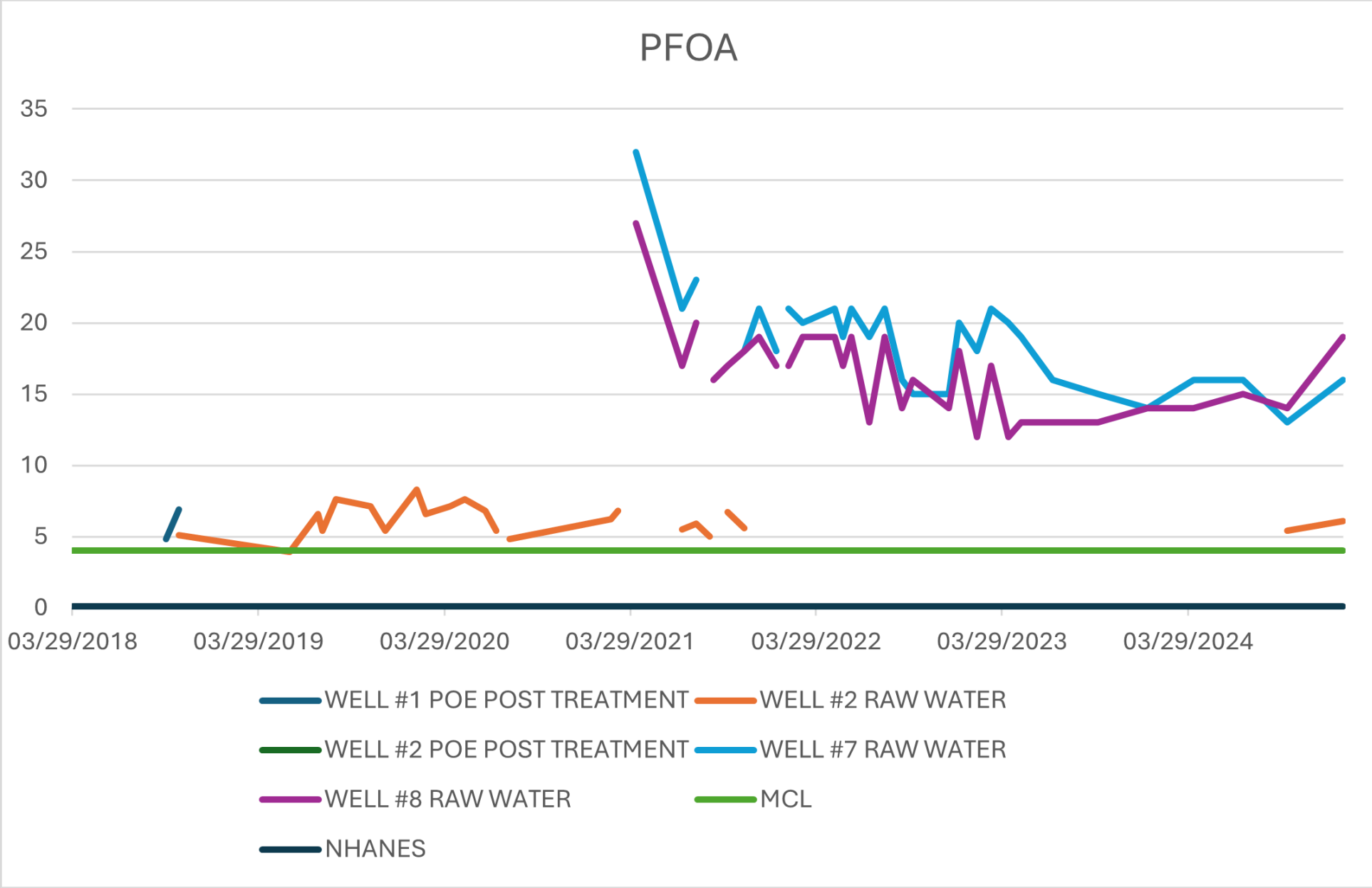
PFAS Sampling Results (2018–2025):

- **Exceedances of Drinking Water Limits:**
  - Some samples exceeded MCL by 2–3 times
  - Some finished water samples exceed MCL after treatment.
  - Wells with exceedances remain offline as treatment systems are installed.

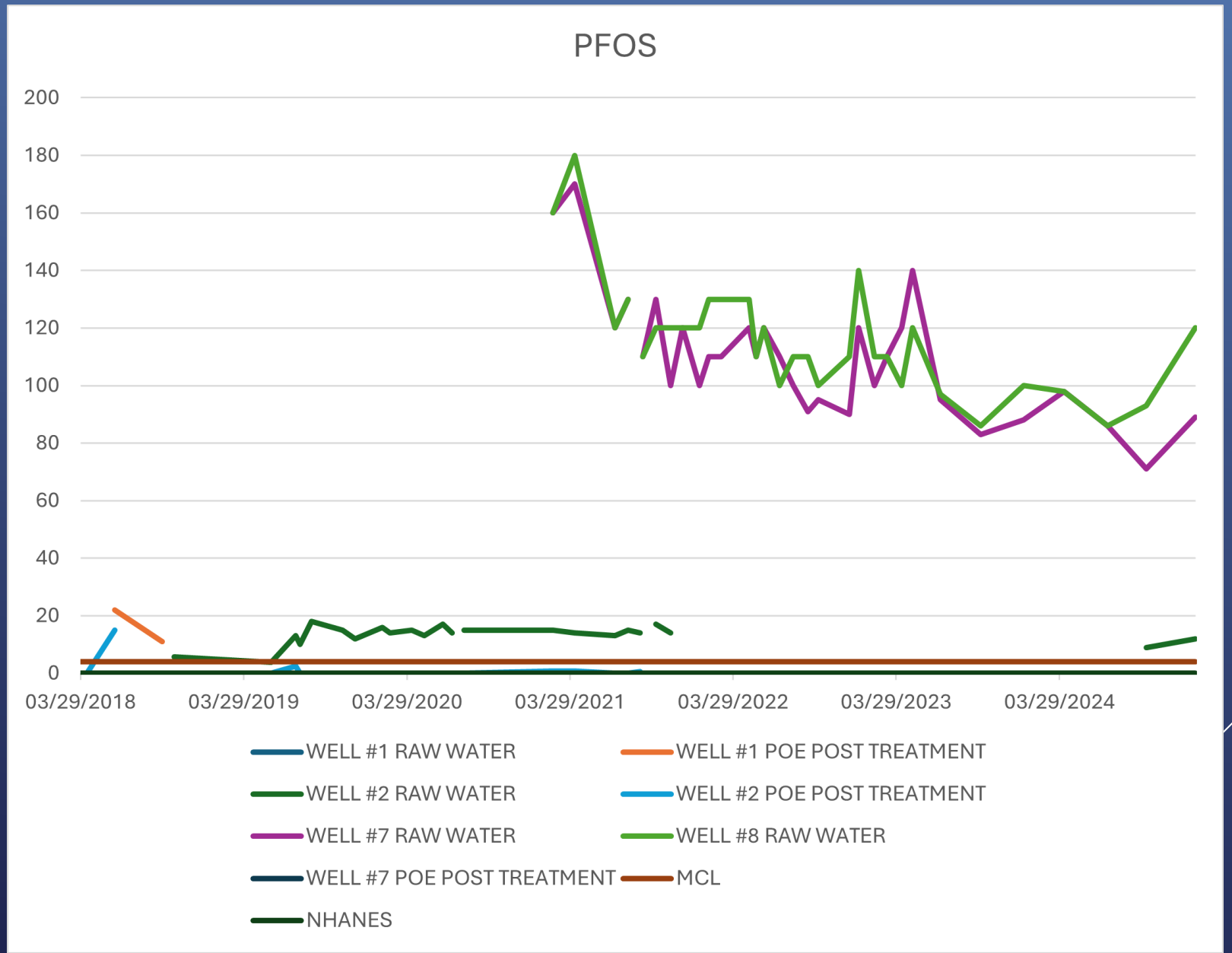
Specific Compound Results:

- **HFPO-DA:** All sample results were zero across all sites.
- **PFNA:**
  - All sample results were zero except for two detections at Well 8 in 2021.
  - Both detections were below the MCL but exceeded NHANES detection level.
- **PFOA, PFOS, and PFHxS:**
  - Levels above MCL detected in untreated well water and occasionally after treatment.

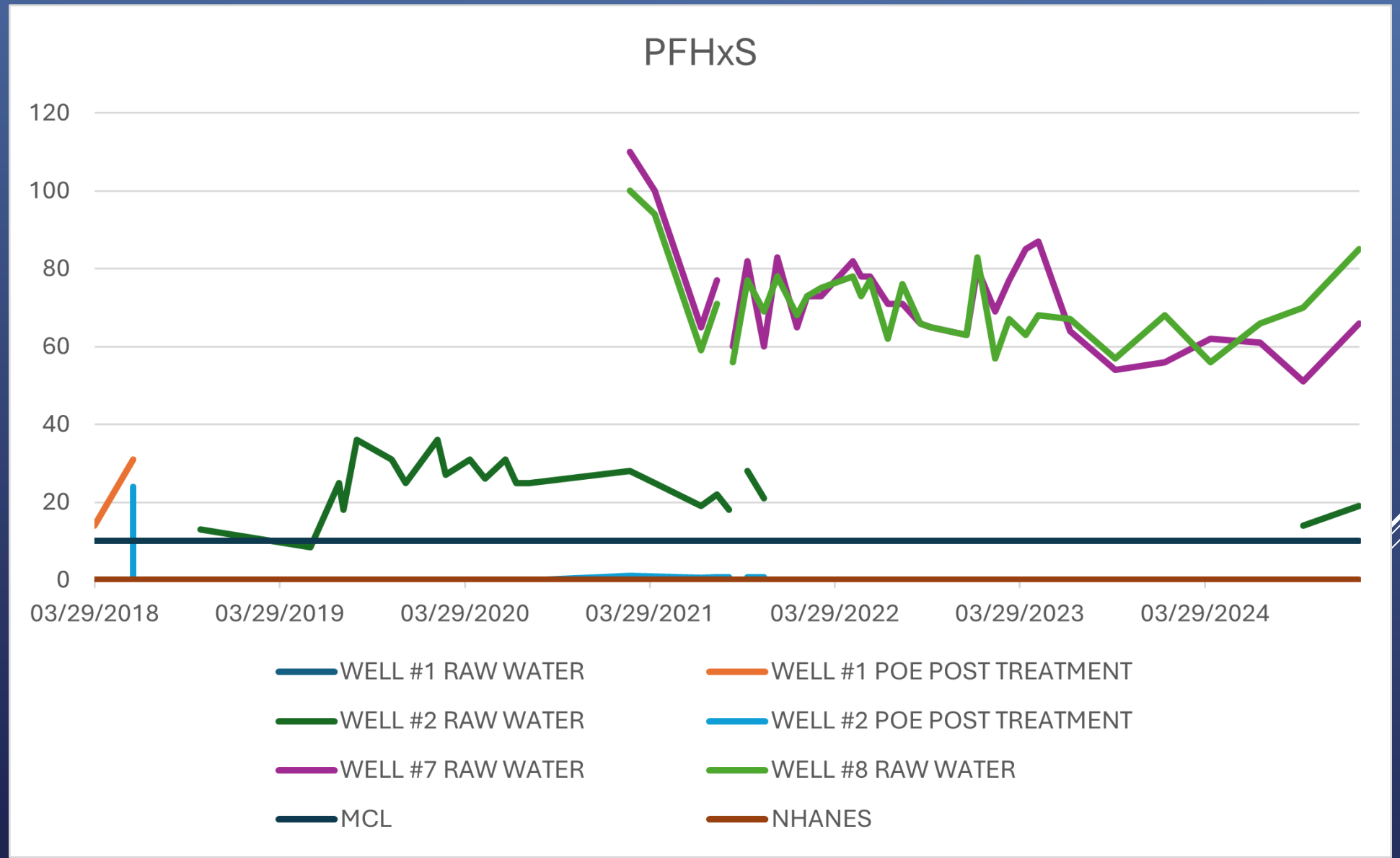
CITY WELLS PRE- AND POST- TREATMENT PFOA LEVELS IN COMPARISON TO MCL AND NHANES DETECTION LEVELS



CITY WELLS PRE- AND POST-TREATMENT PFOS LEVELS IN COMPARISON TO MCL AND NHANES DETECTION LEVELS



CITY WELLS PRE- AND POST- TREATMENT PFHXS LEVELS IN COMPARISON TO MCL AND NHANES DETECTION LEVELS



PFAS DETECTION IN HUMANS

Detection of PFAS in Humans:

- Measured primarily through blood analysis, reflecting balance between exposure and excretion.
- Excretion levels vary among individuals, even within the same household.

Primary Excretion Pathways:

- PFAS are primarily excreted through urine.
- Individuals with kidney problems may face difficulties in eliminating PFAS.

Additional Excretion Pathways:

- PFAS excreted during menstruation.
- PFAS excreted through breast milk.

HEALTH EFFECTS OF PFAS EXPOSURE

Elevated Cholesterol Levels:

Linked to higher cholesterol levels in humans (small changes noted)

- Animal studies lack clarity on the causal mechanism.
- Elevated cholesterol used in heart disease risk assessments.

Reduced Antibody Response to Vaccines:

- Possible immunosuppression in children due to PFAS exposure.
- Lower vaccine effectiveness linked to reduced immune response.
- Associations with increased infection risks (limited studies).

HEALTH EFFECTS OF PFAS EXPOSURE, CONT.

Altered Liver Enzyme Levels:

- Potential liver inflammation and triglyceride buildup (fatty liver).
- PFAS may disrupt lipid metabolism and choline availability.
- Linked to nonalcoholic fatty liver disease (NAFLD) epidemic.

Pregnancy Complications (PFOA, PFOS):

- PFAS may harm the placenta, leading to issues like preeclampsia, poor fetal growth, and obesity in children.
- Disrupt molecules like PPARs and affect fat balance in the placenta.
- Research complicated by varying PFAS types and study limitations.

HEALTH EFFECTS OF PFAS EXPOSURE, CONT.

Increased Risk of Cancer:

- Human studies associate PFAS exposure with testicular and kidney cancers.
- Laboratory studies link PFAS to liver, testicle, breast, and pancreatic cancers.
- Possible risks for prostate, bladder, and ovarian cancers (not fully confirmed).
- More to follow concerning specific cancer rates in the City of Westfield

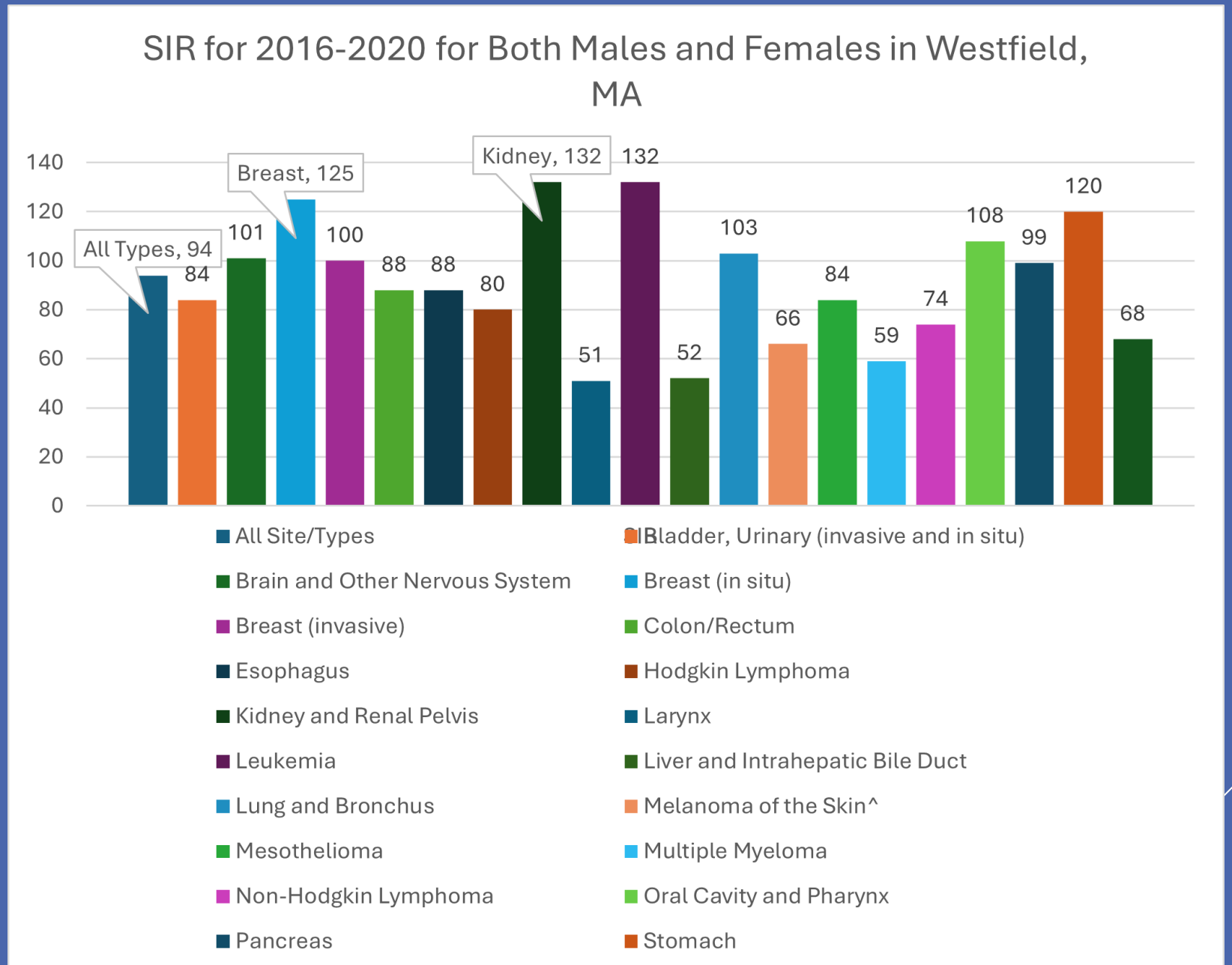
STANDARDIZED INCIDENCE RATIO (SIR)

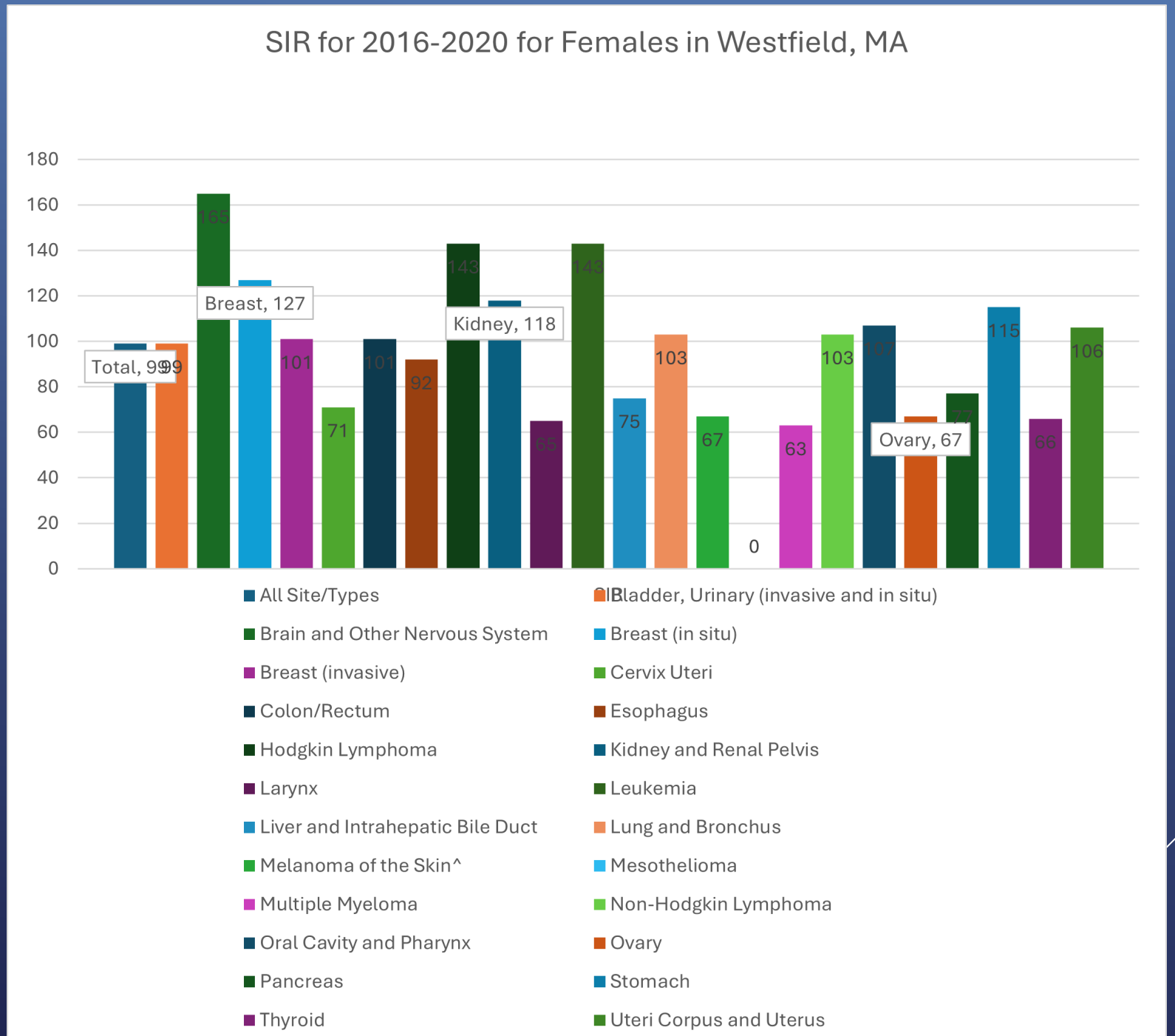
SIR= (Observed/Expected)*100

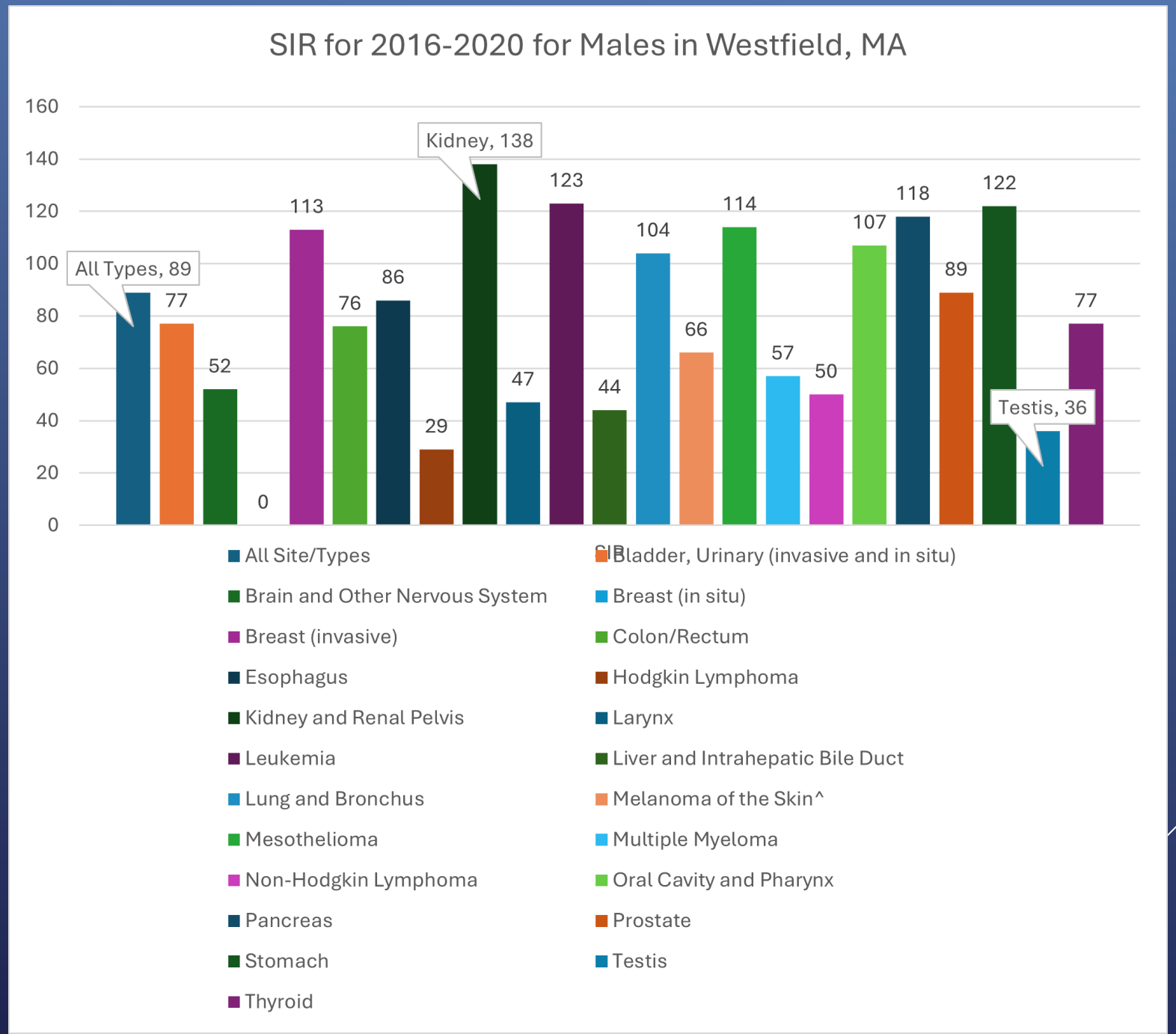
Observed= Number of actual cases

Expected= Adjusted State Rate based on population

SIR>100, local community has higher rate than state


SIR for 2016-2020 for Both Males and Females in Westfield, MA
140
120
100
80
60
40
20
0
All Types, 94
84
101
Breast, 125
100
88
88
80
Kidney, 132
132
51
52
103
66
84
59
74
108
99
120
68
All Site/Types
Bladder, Urinary (invasive and in situ)
Brain and Other Nervous System
Breast (in situ)
Breast (invasive)
Colon/Rectum
Esophagus
Hodgkin Lymphoma
Kidney and Renal Pelvis
Larynx
Leukemia
Liver and Intrahepatic Bile Duct
Lung and Bronchus
Melanoma of the Skin^
Mesothelioma
Multiple Myeloma
Non-Hodgkin Lymphoma
Oral Cavity and Pharynx
Pancreas
Stomach


SIR for 2016-2020 for Females in Westfield, MA
180
160
140
120
100
80
60
40
20
0
Total, 99
99
165
Breast, 127
101
71
101
92
143
Kidney, 118
65
143
75
103
67
0
63
103
107
Ovary, 67
77
115
66
106
All Site/Types
Bladder, Urinary (invasive and in situ)
Brain and Other Nervous System
Breast (in situ)
Breast (invasive)
Cervix Uteri
Colon/Rectum
Esophagus
Hodgkin Lymphoma
Kidney and Renal Pelvis
Larynx
Leukemia
Liver and Intrahepatic Bile Duct
Lung and Bronchus
Melanoma of the Skin^
Mesothelioma
Multiple Myeloma
Non-Hodgkin Lymphoma
Oral Cavity and Pharynx
Ovary
Pancreas
Stomach
Thyroid
Uteri Corpus and Uterus


SIR for 2016-2020 for Males in Westfield, MA
160
140
120
100
80
60
40
20
0
All Types, 89
Kidney, 138
Testis, 36
89
77
52
0
113
76
86
29
138
47
123
44
104
66
114
57
50
107
118
89
122
36
77
SIR
All Site/Types
Bladder, Urinary (invasive and in situ)
Brain and Other Nervous System
Breast (in situ)
Breast (invasive)
Colon/Rectum
Esophagus
Hodgkin Lymphoma
Kidney and Renal Pelvis
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Leukemia
Liver and Intrahepatic Bile Duct
Lung and Bronchus
Melanoma of the Skin^
Mesothelioma
Multiple Myeloma
Non-Hodgkin Lymphoma
Oral Cavity and Pharynx
Pancreas
Prostate
Stomach
Testis
Thyroid

ADDITIONAL QUESTIONS RELATED TO PFAS

Does age or time of exposure increase my cancer risk?

As of now, there is no definitive answer regarding whether age or the duration of exposure increases the risk of cancer. This information may become available in the future as further studies are conducted.

Are the amount of PFAS I am exposed to increase my cancer risk?

Several studies have shown that exposure to PFAS can increase cancer risk; however, these studies have not identified specific amounts, given the many factors associated with PFAS.

ADDITIONAL QUESTIONS RELATED TO PFAS, CONT.

Can you get PFAS out of your body?

PFAS can gradually leave the body over time through urine, blood, and even breast milk. However, the duration required depends on the specific PFAS compound and the individual's health (ATSDR, 2024).

Is there any increase in concern about young children and PFAS exposure?

"Since children are more likely to chew on fabrics and toys containing PFAS, their exposure may increase. Additionally, there is concern about babies being exposed to PFAS through breast milk (ATSDR, 2024).

ADDITIONAL QUESTIONS RELATED TO PFAS, CONT.

How do I know if I have PFAS in my body?

You can have your blood tested for PFAS levels; however, it's important to note that PFAS blood levels do not predict future health outcomes. While knowing your PFAS level may be informative, it will not provide definitive information about health effects, identify specific health problems, or rule out conditions caused by exposure. Due to the persistence and bioaccumulation of PFAS, there are numerous factors that make it challenging to determine what PFAS levels mean for an individual. Consult your healthcare provider to decide if blood testing is appropriate for you (ATSDR, 2024).

Is there a human treatment for PFAS?

There are currently no approved medical treatments available to remove PFAS from the body (ATSDR, 2024).

ADDITIONAL QUESTIONS RELATED TO PFAS, CONT.

Do home filters like Brita remove PFAS?

Brita filters do not remove PFAS, although the activated carbon in the filter may help reduce PFAS levels. Brita makes no claim that its filters can make PFAS safe, nor are they certified to do so (Water Purification Guide, 2025). However, a new filter developed by CycloPure, called Purefast, has been found to remove PFAS and is compatible with Brita pitchers (Environmental Health Sciences, 2022).

Does boiling water remove PFAS?

"PFAS cannot be removed from water through boiling due to its chemical properties, which make it resistant to water. Boiling water containing PFAS can increase its concentration, as water molecules evaporate while the PFAS remains. No matter the duration or temperature of boiling, PFAS will not break down or become inert. This resistance is also why PFAS is used in products like Teflon for non-stick coatings on frying pans. Therefore, boiling water is not an effective method to remove PFAS (Pure Water Blog, 2023).

ADDITIONAL QUESTIONS RELATED TO PFAS, CONT.

How do I reduce my PFAS exposure?

There are several steps individuals can take to reduce PFAS exposure. Start by determining whether your drinking water contains PFAS, verifying that consumer products you purchase are PFAS-free, and avoiding food products sourced from areas contaminated with PFAS. For additional information on how to minimize exposure for yourself and your family, please visit the EPA's website https://www.epa.gov/pfas/meaningful-and-achievable-steps-you-can-take-reduce-your-risk. You can also refer to the EPA Fact Sheet at https://www.epa.gov/system/files/documents/2024-04/water-filter-fact-sheet.pdf for guidance on reducing PFAS with home water filters (United States Environmental Protection Agency, 2025).

What treatment is there for drinking water for public water systems?

Removing PFAS from drinking water is recognized as an expensive endeavor. Currently, three treatment processes are known to be effective for PFAS removal: granular activated carbon, ion exchange resins, and high-pressure membrane systems. The optimal choice among these technologies depends on balancing various factors (EPA, 2024).

CONCLUSION

PFAS Exposure Through Drinking Water:

- Common route of exposure as contamination migrates into groundwater.
- Elevated PFAS levels detected in Westfield, MA, wells.
- Treatment systems installed, but efforts to reduce contamination continue.

Health Effects:

- Detected through blood tests; exposure levels vary by individual.
- Linked to higher cholesterol, reduced liver enzyme levels, preeclampsia, and cancers (e.g., kidney, testicular).
- Elevated kidney cancer rates in Westfield; testicular cancer at lower-than-expected rates.

Global Impact and Ongoing Research:

- Health effects and exposure pathways are still being studied.
- Steps to reduce exposure: use PFAS-free materials, remove PFAS products, and monitor drinking water.

Important Considerations:

- Boiling water increases PFAS concentration, making it more hazardous.
- No current treatment for PFAS in the human body.
- Drinking water can be treated using three methods to remove PFAS.
- Advances in research aim to reduce health risks and improve prevention measures.

SOURCES

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RAB MEMBER DISCUSSION

- Please raise your hands and unmute yourself when recognized.
- Introduce yourself at the beginning of your question or comment.
- Please limit questions to 2 minutes to give other RAB members an opportunity to participate.

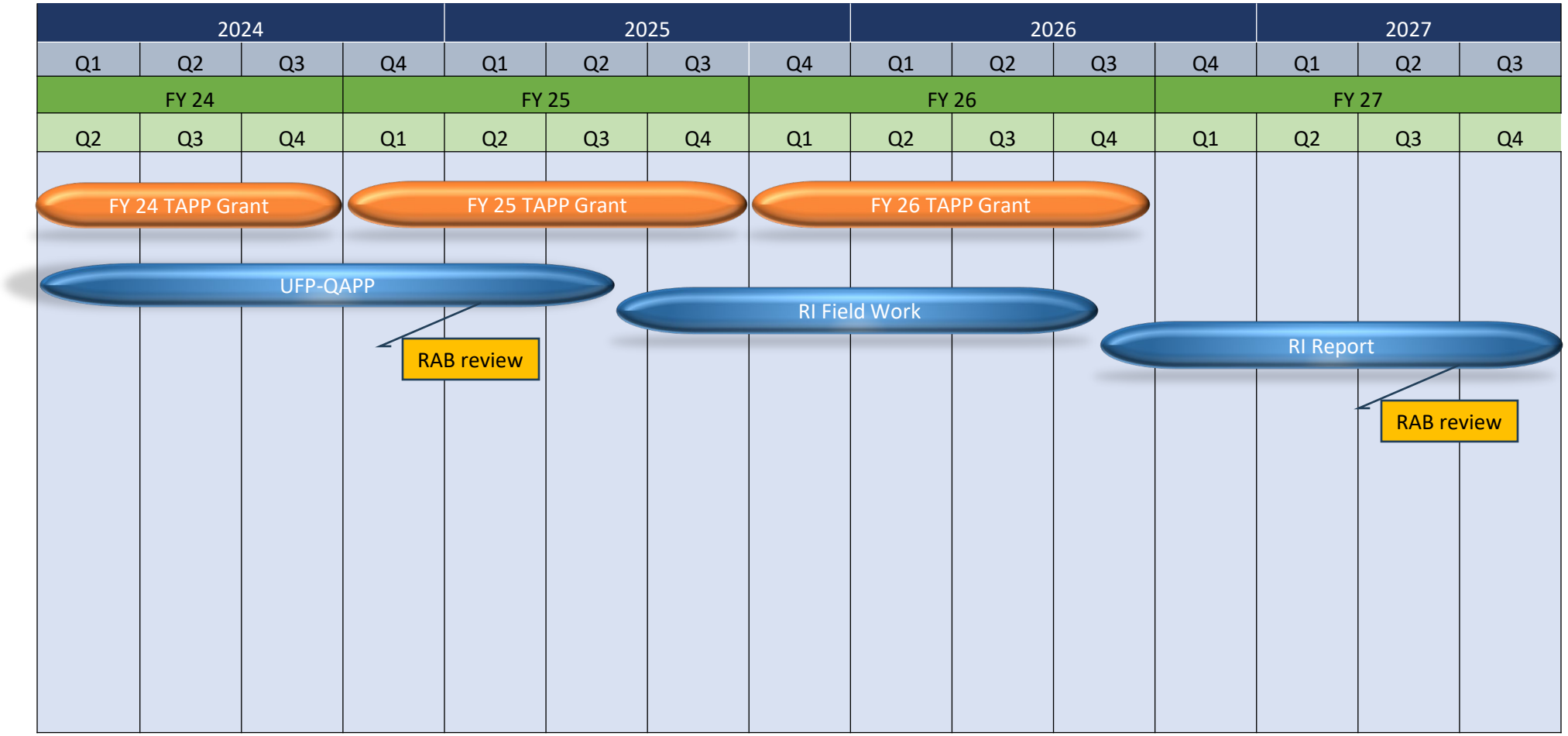
Environmental Restoration Program Status Update

Robert Lewis
National Guard Bureau
Remedial Project Manager

Environmental Restoration Program

- Site 2 Current Status (No Update)
  - Long term monitoring, working towards a Permanent Solution Statement (PSS)
  - A Lease Amendment is under preparation
- PFAS Remedial Investigation (RI)
  - Comments received from RAB and MassDEP on the Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) in February 2025
  - Responses to comments provided in April 2025; revised UFP-QAPP forthcoming
  - Start of field sampling activities late Spring 2025

Barnes Restoration Calendar



Revisions to the UFP-QAPP

- Several updates to the UFP- QAPP are in progress:
  - Revisions in response to MassDEP and RAB comments
  - Revision of PFAS screening levels based on the January 2025 Assistant Secretary of Defense Memo (link: https://www.acq.osd.mil/eie/eer/ecc/pfas/docs/policies/Memo-for-Investigating-DoD-PFAS-Cleanup.pdf)
  - Addition of AOC 3 and a background study for PFAS in surface soils due to change in screening levels
  - Addition of branched and linear isomer analysis for PFOS and PFHxS – most prevalent PFAS compounds, analysis can help support source identification

Updated PFAS Screening Levels

PFAS	DoD Screening Level (ASD, 2025)			
	Soil (µg/kg)	Basis	Tap Water (ng/L)	Basis
Hexafluoropropylene oxide dimer acid (HFPO-DA or GenX)	23	2024 RSL	1.5	2024 RSL
Perfluorobutanesulfonic acid (PFBS)	1,900	2024 RSL	600	2024 RSL
Perfluorobutanoic acid (PFBA)	7,800	2024 RSL	1,800	2024 RSL
Perfluorodecanoic acid (PFDA)	0.06	MDL	0.52	MDL
Perfluorohexanesulfonic acid (PFHxS)	130	2024 RSL	10	MCL
Perfluorohexanoic acid (PFHxA)	3,200	2024 RSL	990	2024 RSL
Perfluorononanoic acid (PFNA)	19	2024 RSL	5.9	2024 RSL
Perfluorooctanesulfonic acid (PFOS)	0.63	2024 RSL	4	MCL
Perfluorooctanoic acid (PFOA)	0.070	MDL	4	MCL
Perfluoropropanoic acid (PFPrA)	3,900	2024 RSL	980	2024 RSL

RSL = Regional Screening Level
MDL = method detection limit
MCL = maximum contaminant level
Green values = New/updated as of January 2025

Regional Background Evaluations for PFAS

- Several Northeast area states have:
  - Well-developed PFAS soil background data
  - Incorporated PFAS soil background into their regulatory programs
  - Plans in place to incorporate existing or new soil PFAS background data sets into regulations
- Other Northeast area states are:
  - In the process of developing background data and figuring out how to incorporate PFAS soil background into regulations

Massachusetts Study Soil Background Values vs. DoD Screening Levels

Typically soil standards consider:

1. Direct contact exposure routes
2. Leaching potential to underlying groundwater
3. Feasibility of achievement (lab reporting limits & background concentrations)

Analyte	Detected Range (Woodward and Curran, 2024) (µg/kg)	DoD Screening Level (µg/kg)
PFOS	0.328 – 6.00	0.63
PFOA	0.293 – 4.2	0.070
PFNA	0.293 – 1.2	19
PFDA	0.329 – 0.755	0.06

Applying PFAS background values may help differentiate background "noise" during site investigations.

Background Surface Soil Locations

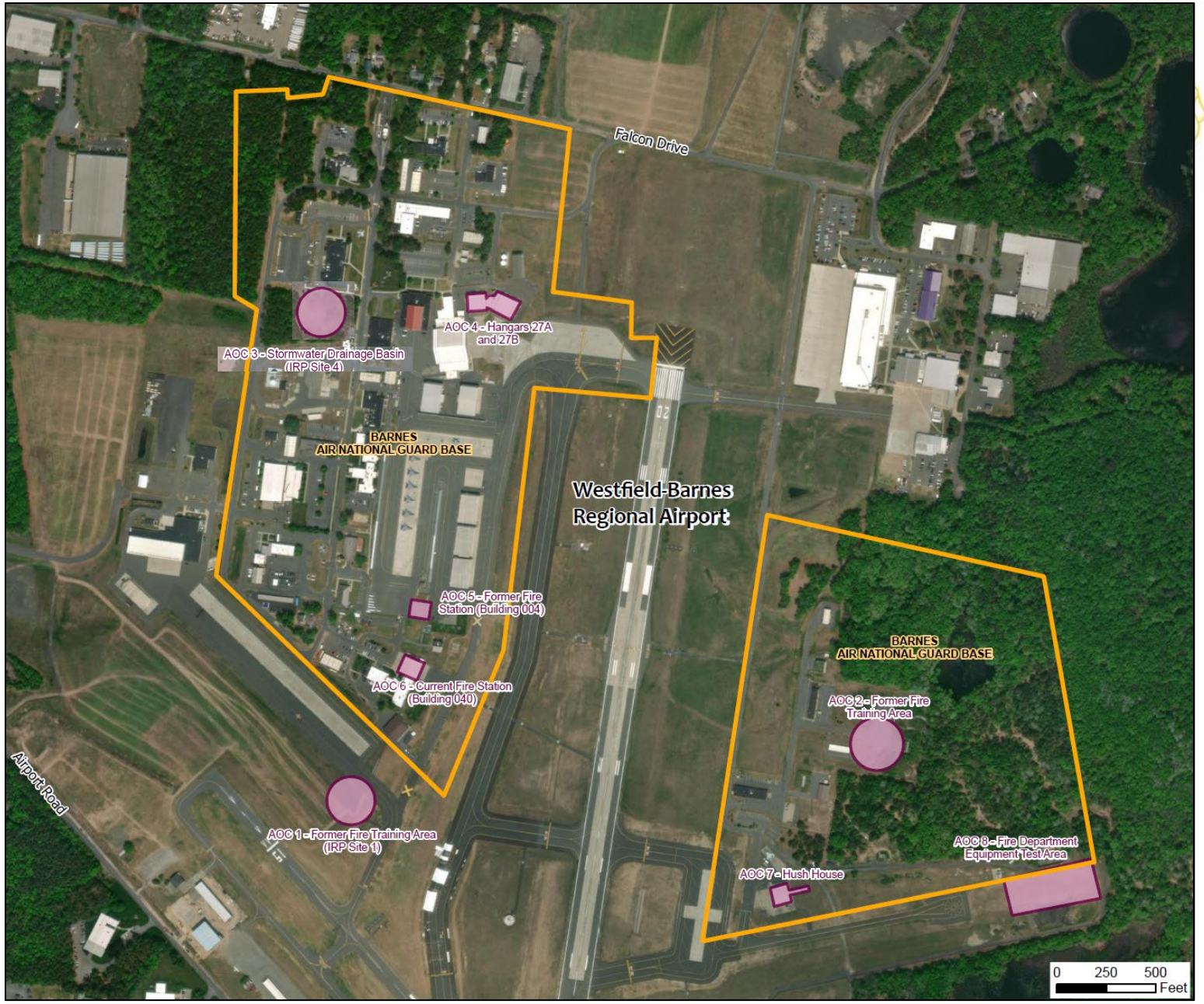
LEGEND

- PROPOSED BACKGROUND SAMPLE LOCATION
- AREA OF CONCERN BOUNDARY (APPROXIMATE)
- INSTALLATION BOUNDARY

DRAFT FOR DISCUSSION

Site Layout

- AOC 1 – Former Fire Training Area
- AOC 2 – Former Fire Training Area
- AOC 3 – Stormwater Drainage Basin
- AOC 4 – Hangars 27A and 27B
- AOC 5 – Former Fire Station
- AOC 6 – Current Fire Station
- AOC 7 – Hush House
- AOC 8 – Fire Department Equipment Test Area



Adding AOC 3 to the Remedial Investigation Scope

Legend

- Proposed Surficial Soil Sample
- SI Soil Sample Exceedance*
- ESI Soil Boring - No Exceedance
- Area of Concern (AOC) - Approximate
- Installation Boundary

DRAFT FOR DISCUSSION

RAB Member Discussion

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Public Questions and Comments

In person: Raise hand to be recognized

Online: Submit questions using chat

Contact Information

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Community Co-Chair
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Websites for More Information

Environmental Restoration Program at 104th Fighter Wing

- General and Links to PFOS/PFOA Information: https://www.104fw.ang.af.mil/About/Environmental/
- Restoration Advisory Board: https://www.104fw.ang.af.mil/About/Restoration-Advisory-Board/

Relative Risk Site Evaluation (RRSE)

- Barnes RRSE: https://www.104fw.ang.af.mil/Portals/5/Barnes_RRSE%20Fact%20Sheet%20and%20Scoring%20Summaries_211215.pdf
- RRSE Primer: https://www.denix.osd.mil/references/dod/policy-guidance/relative-risk-site-evaluation-primer/RRSE_Primer_Summer1997.pdf

104th Fighter Wing Environmental Administrative Record

- https://ar.afcec-cloud.af.mil/Search.aspx (Select ANG radio button, select Barnes, and click on search)

MassDEP PFAS Information

- https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas

Westfield Water Department PFAS Information

- https://www.cityofwestfield.org/672/PFCs-Information-Updates

RAB Rule Handbook and Information on Technical Assistance for Public Participation

- https://www.denix.osd.mil/rab/home/

Air Force Response to PFOS and PFOA

- https://www.afcec.af.mil/WhatWeDo/Environment/Perfluorinated-Compounds/

Closing Remarks

Jane Oksin

Col. Michael Glass

Adjourn