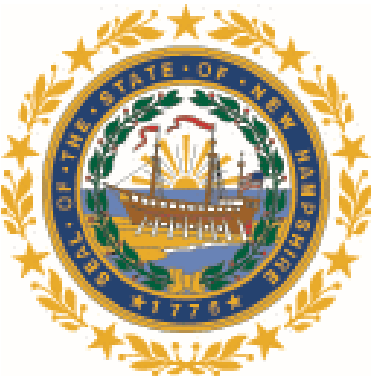


# New Hampshire's Experience with PFAS & Drinking Water

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September 21, 2022



# Drinking Water Professionals & PFAS

- Thank you to drinking water professionals
- Addressing PFAS has required them to rise to the occasion and:
  - Work extended hours
  - Expand dialogue with the community
  - Expend substantial resources
  - Manage increased stress due to health concerns, public communications, costs and uncertainty
  - Increase your knowledge and skills (technical, public relations, legal, financial, public health)
- Our work addressing PFAS is unfortunately still just getting started:
  - Revised standards
  - Source water protection
  - Identifying and mitigating exposure



# Water Systems & PFAS (continued)

- Difficulty of our work is compounded by:
  - Substantial PFAS contamination in NH
  - Lack of resources despite 500% increase in funding
  - Arsenic and manganese regulations
  - Lead and copper rule
  - Inflation
  - Higher interest rates
  - Supply chain breakdown
  - Lack of qualified workers
  - COVID
  - Concerned citizens
  - Diversity of opinions
  - Droughts



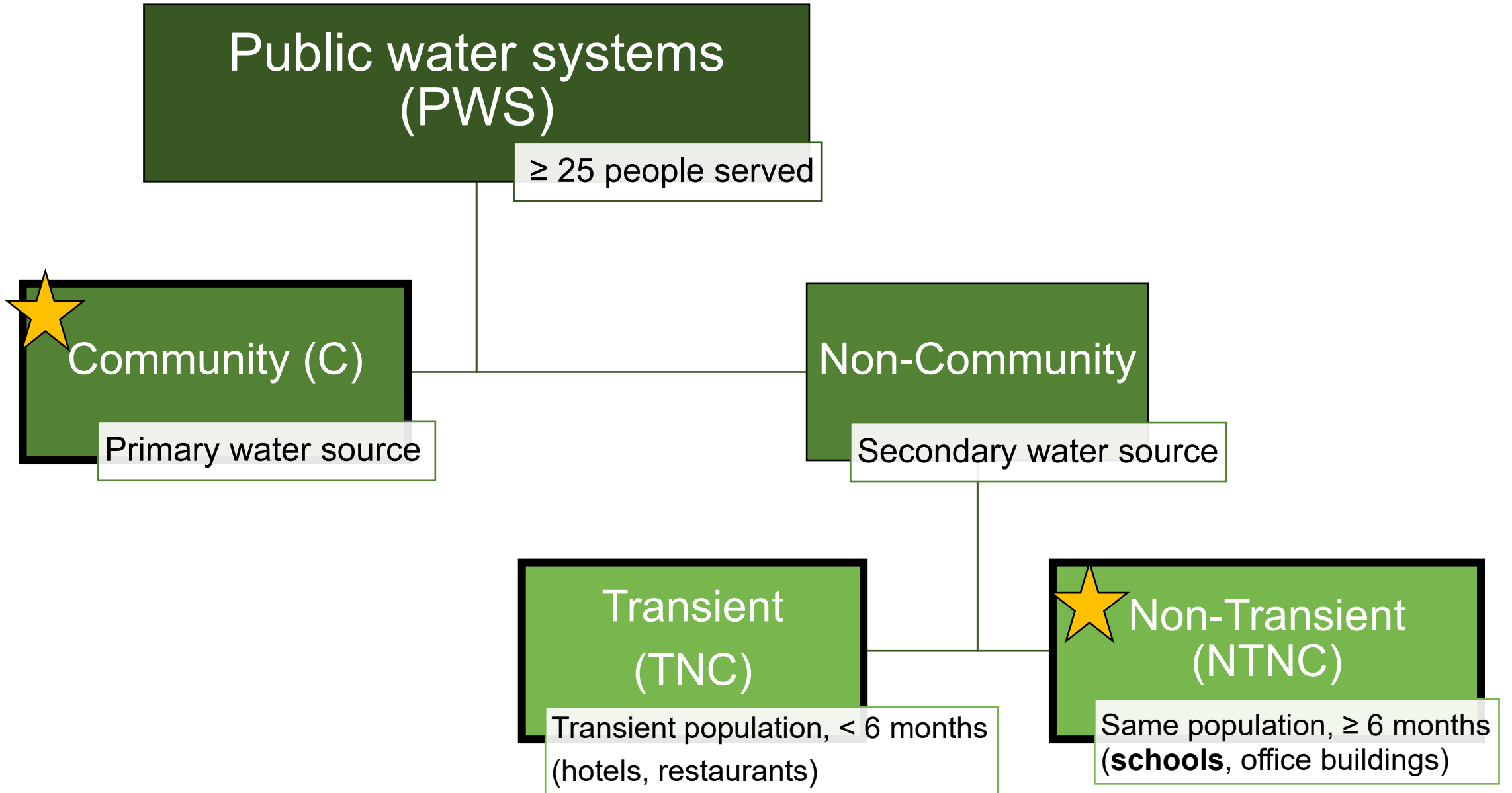
# PFAS Exceedance

Perfluorochemical	Maximum Contaminant Level (MCL) / Ambient Groundwater Quality Standards (AGQS) (parts per trillion – ppt)
Perfluorooctanoic Acid (PFOA)	12
Perfluorooctanesulfonic Acid (PFOS)	15
Perfluorohexanesulfonic Acid (PFHxS)	18
Perfluorononanoic Acid (PFNA)	11

\* Enforced beginning September 30,2019. Passed into law July 28, 2020



State MCLs for PFAS										
Specific PFAS	NHDES	NJDEP	VT DEP	MI DHHS	MA DEP	NY DOH	RIDEM	WI DNR		
PFOA	12	13	20* combined	8	20* combined	10	20* combined	70 combined		
PFOS	15	14		*		16			*	*
PFHxS	18			*		51			*	
PFNA	11	13		*		6			*	
PFHpA				*					*	
PFDA					*		*			
GenX				370						
PFBS				420						
PFHxA				400,000						
All units are in part-per-trillion										



Required to sample for PFAS

## Other Points About NH's MCLs

- Allow water systems to use Method 533 or 537
- Treat PFAS as a chronic contaminant/health risk.  
Vermont handles it as an acute health risk
- Bottled water sold in NH must test for PFAS and demonstrate compliance with the MCL



# USEPA Health Advisories Released 6/15/22

- Interim updated Health Advisory for PFOA = 0.004 ppt  
(NH MCL 12 ppt)
- Interim updated Health Advisory for PFOS = 0.02 ppt  
(NH MCL 15 ppt)
- Final Health Advisory for GenX chemicals = 10 ppt  
(no NH MCL but no NH results near this level)
- Final Health Advisory for PFBS = 2,000 ppt  
(no NH MCL but no NH results near this level)

New Hampshire has also adopted MCLs for PFNA and PFHxS. USEPA has not proposed health advisories for these compounds to date.



# PFOA and PFOS –

- USEPA is going to adopt an MCL for PFOA and PFOS
  - Draft MCL end of 2022
  - Final MCL end of 2023
- USEPA adopting the MCL without nationwide occurrence data of low level PFAS
  - UCMR 3 (2013-2015) had reporting limits of 20 ppt to 40 ppt
  - UCMR 5 which will look for low level PFAS (and lithium) nationwide from 2023-2025
  - USEPA 6/15/22 health advisories are in parts-per-quadrillion
  - Recent state MCLs are generally 10-20 ppt
- MCLs being adopted for PFOA and PFOS without assessing impacts on wastewater and the SDWA and CWA so far
  - Class V UIC wells
  - Other forms of wastewater groundwater discharges that have the same effect as Class V wells
  - Surface water quality standards (MCLs are a surface water quality standard where drinking water intakes are nearby)

# USEPA Health Advisories

## What is a Health Advisory?

- Health advisories provide information on contaminants that can cause human health effects and are known or anticipated to occur in drinking water. EPA's health advisories are non-enforceable and non-regulatory and provide technical information to states agencies and other public health officials on health effects, analytical methodologies, and treatment technologies associated with drinking water contamination. EPA's health advisory level for PFOA and PFOS offers a margin of protection for all Americans throughout their life from adverse health effects resulting from exposure to PFOA and PFOS in drinking water.
- **In plain language a health advisory is the “no risk” level**
- Drinking water and safety regulations are not based on “no risk”. However, PFOA and PFOS are toxic, manmade, persistent, bioaccumulative, mobile and should not be in our drinking water so public opinion is often these chemicals should be regulated to “no risk”.
- The PFOA and PFOS health interim health advisory failed to consider analytical limitations and provides a value that cannot be measured.

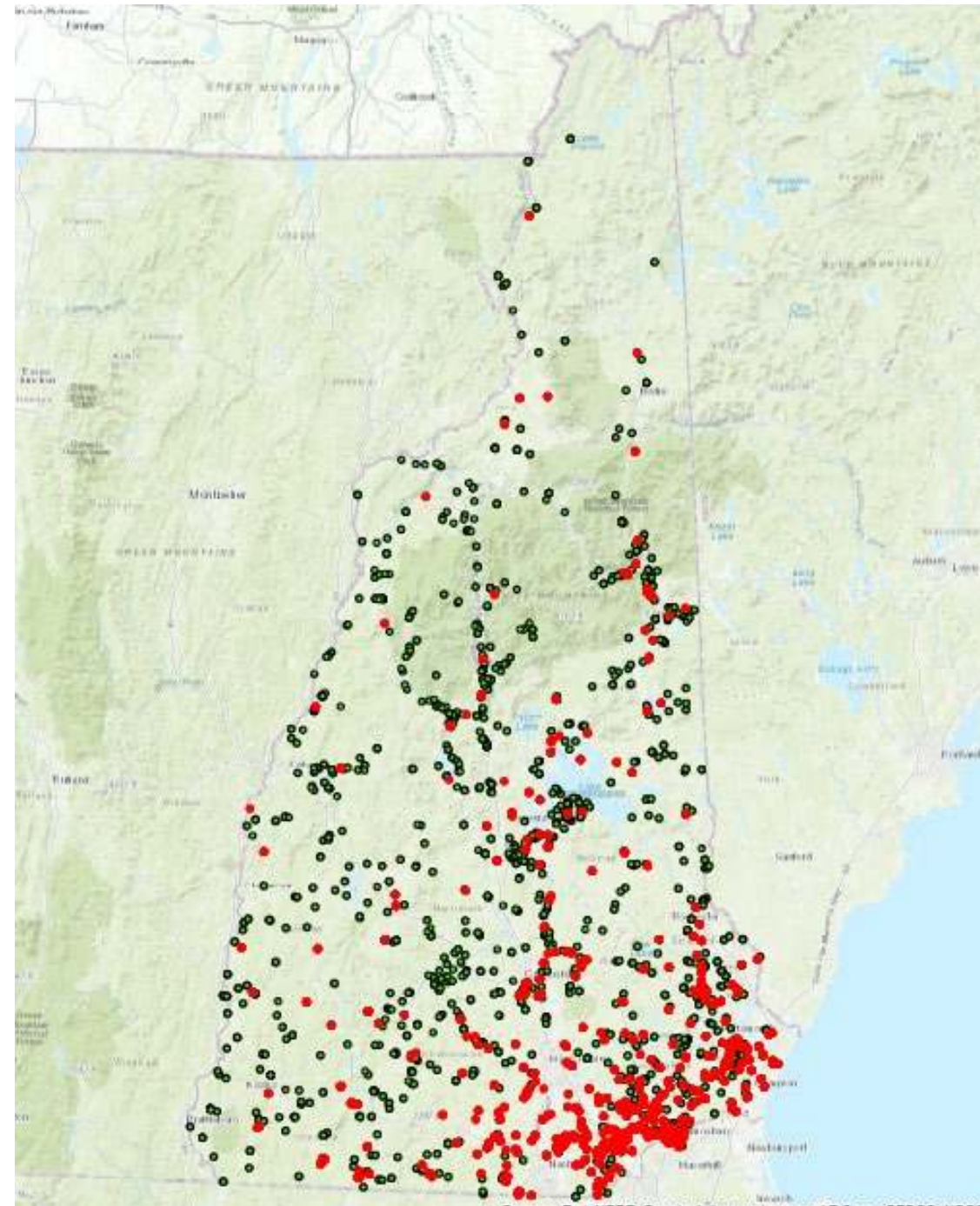
# USEPA's Advice - PFOA/PFOS and Public Water Systems

- 1) Sample public waters systems
  - a) NH has sampled thousands of public and private wells using low reporting limits and an extended list of analytes since 2016
  - b) Mandatory sampling required beginning in 2019
- 2) Assess data
  - a) NH PFAS data viewer
  - b) NH Legislative summaries
  - c) NHDES Onestop & other summaries
- 3) Notify public
  - a) PFOA, PFOS, PFNA and PFHxS NH MCL exceedance notification regulations
  - b) Annual Consumer Confidence Report
- 4) Reduce PFOS/PFOA levels in drinking water
  - a) Financial Resources – NH DW Trust Fund, ARPA, SRF, Budget Surplus, PFAS WIIN Grant
  - b) Systems have installed treatment, changed sources or interconnected (exposure reduced for hundreds of thousands of NH residents).
- 5) Identify and eliminate sources sources of PFAS
  - a) Elevated detections of PFAS in public water systems are investigated
  - b) Active waste sites now have to sample and address PFAS exceedances



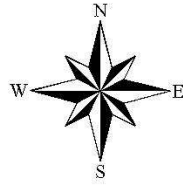
# PFOA & PFOS in NH

- Unprecedented challenge & response by water systems & NHDES
- 1/3 of all sources of water for public water systems detect PFOA or PFOS – likely higher because NHDES gets mostly data over the reporting limit instead of detection limit
- Water systems and NHDES have worked tirelessly since 2016 to reduce/eliminate exposure to these compounds





# Detections of PFOA or PFOS in Public Water Supplies & Private Wells

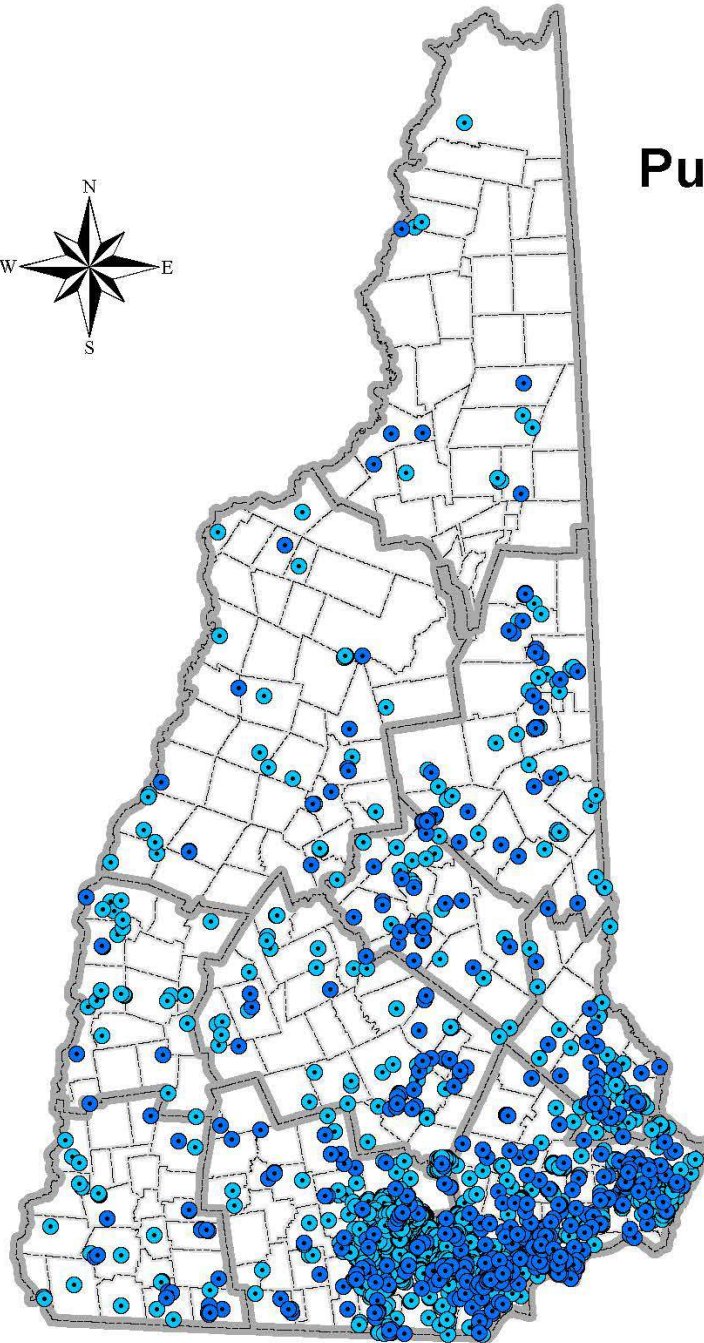


0 125,000 250,000 500,000 Feet

1 in = 125,000 feet

## Legend

- PWS Detections of PFOA / PFOS
- Private Well Detections of PFOA / PFOS
- ▭ County Boundaries
- ▭ Town Boundaries



The data presented is under constant revision as new sites or facilities are added. The data may not contain all of the potential or existing sites or facilities. NHDES is not responsible for the use or interpretation of this information. Not intended for legal purposes.

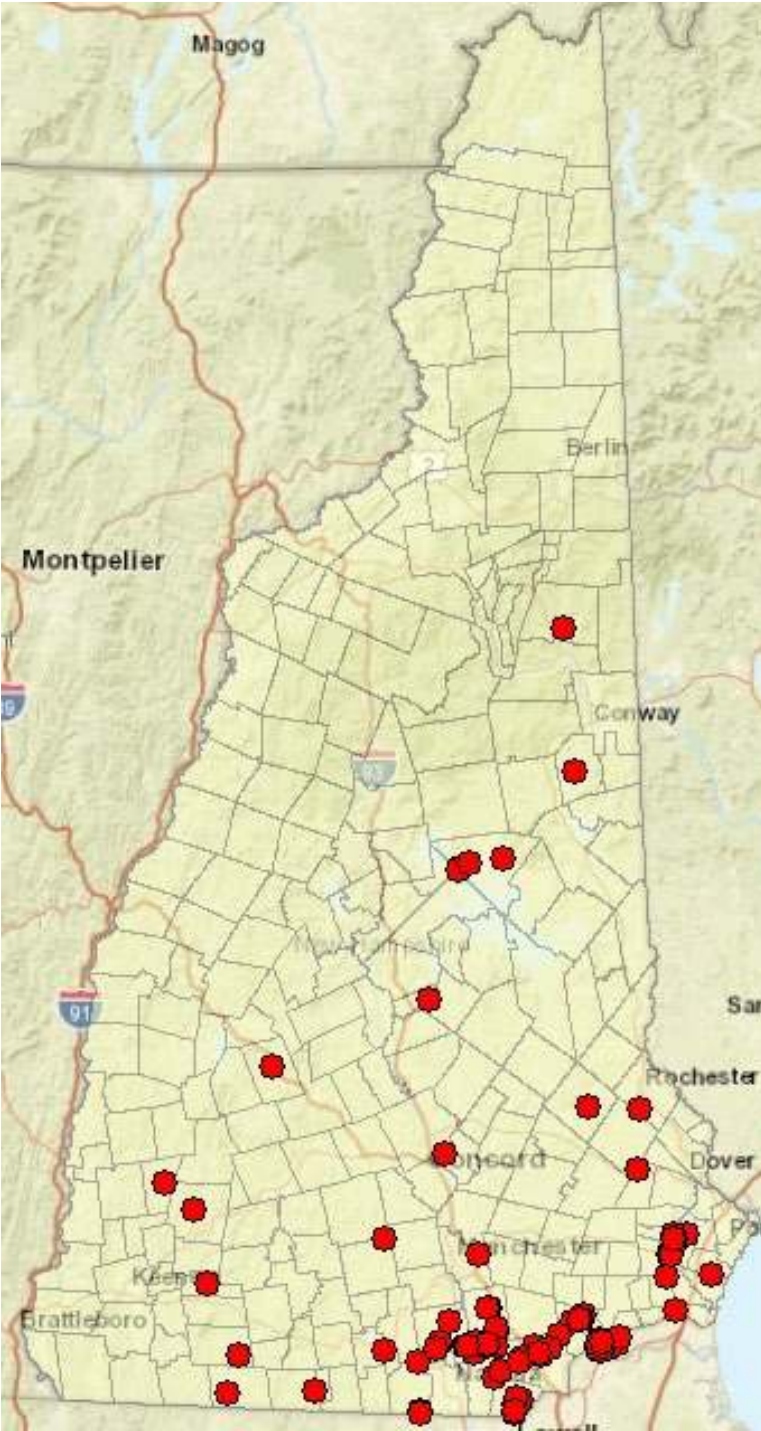


# PFAS Public Water Systems

SOURCES SAMPLED	SOURCES WITH PFAS DETECTIONS	SOURCES EXCEEDING NH PFAS MCL
1500	511	Approx. 150
	30%	10%

NHDES MCLs for PFAS

- PFOA – 12 ppt;
- PFOS – 15 ppt;
- PFNA – 11 ppt;
- PFHxS – 18 ppt



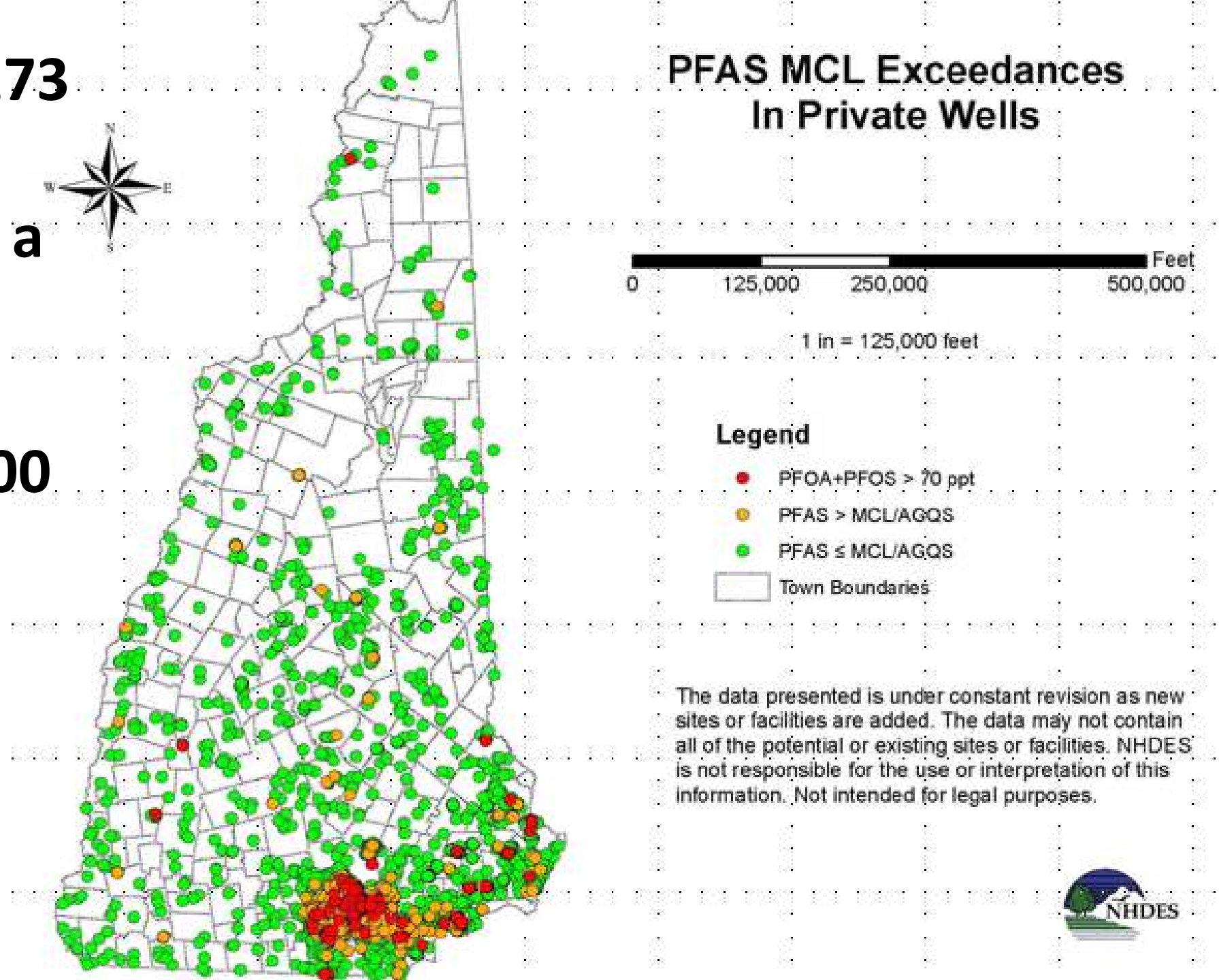
# **PFAS Treatment Systems**

<b>ACTIVATED CARBON, GRANULAR</b>	<b>37</b>
<b>RESIN PFAS ADSORPTION</b>	<b>8</b>
<b>REVERSE OSMOSIS (POU)</b>	<b>6</b>
<b>FLOW MIX</b>	<b>2</b>
<b>INTERCONNECTIONS</b>	<b>DOZENS</b>



**2,785 out of 9,173  
private wells  
sampled exceed a  
NH MCL**

**There are 275,000  
private wells in  
NH**





# ***PFAS Impacts are Present Throughout New Hampshire***

Updated: April 11, 2022

## **PFAS SAMPLES**

Data in NHDES' Environmental Monitoring Database (EMD) ~ 18,651 samples

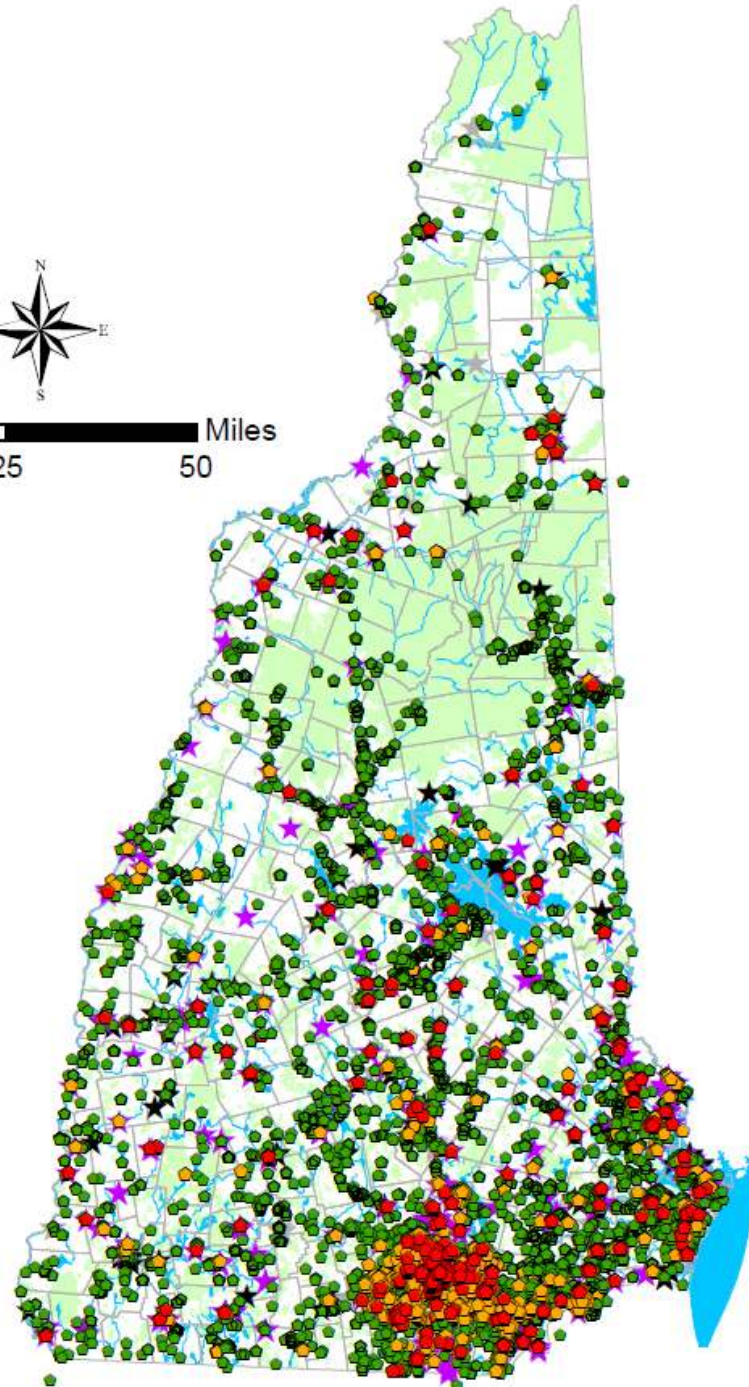
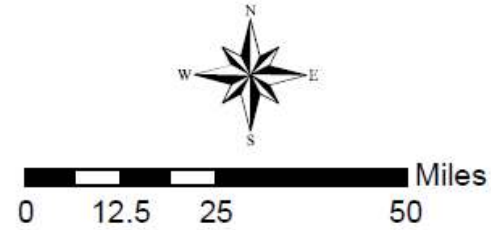
- ◆ PFOA+PFOS > 70 ppt
- ◆ PFAS > AGQS / MCL
- ◆ PFAS ≤ AGQS / MCL

## **PFAS SITES**

Data in NHDES' Onestop Database ~ 484 sites

- ★ Site with PFAS > AGQS
- ★ Site with PFAS Detections
- ★ Site with PFAS Screening  
No Detections

- Political Boundary
- Major Waterbody
- Conservation Land



# PFAS Financial Assistance Programs- Private Wells

- A one-time rebate of up to **\$5,000** for the installation of PFAS treatment or up to **\$10,000** for a service connection to a public water system
- \$20M available (approximately 3,500 wells)
  - Funding comes from State surplus funds & a NH Trust Fund established with awards from MtBE litigation

## RESTRICTIONS

- The property may not already have an offer of alternate water from a third party.
- This program does not cover any expenses related to post installation operation and maintenance of the treatment system.
- Treatment or a service connection installed prior to September 30, 2019 are ***not*** eligible for the rebate program.

SUMMARY OF NHDES FUNDING PROGRAMS FOR DRINKING WATER				
TRADITIONAL FUNDING				
DWSRF	Annual (26% loan forgiveness)	\$20	M	Per Year
Drinking Water and Groundwater Trust Fund	Annual (grants and loans)	\$20	M	Per Year
TOTAL TRADITIONAL ANNUAL FUNDING		\$40	M	
NEW FUNDING				
ARPA	One-time (grant)	\$75	M	One-time
PFAS Remediation Grant	One-time (grant)	\$100	M	One-time
PFAS Remediation Loan	One-time (10%-50%?? Loan forgiveness)	\$50	M	One-time
2022 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2023 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2024 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2025 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2026 Emerging Contaminant	100% Loan Forgiveness	\$8	M	
2022 Lead Service Line	49% Loan Forgiveness	\$28	M	
2023 Lead Service Line	49% Loan Forgiveness	\$28	M	
2024 Lead Service Line	49% Loan Forgiveness	\$28	M	
2025 Lead Service Line	49% Loan Forgiveness	\$28	M	
2026 Lead Service Line	49% Loan Forgiveness	\$28	M	
2022 Supplemental SRF	49% Loan Forgiveness	\$18	M	
2023 Supplemental SRF	49% Loan Forgiveness	\$21	M	
2024 Supplemental SRF	49% Loan Forgiveness	\$23	M	
2025 Supplemental SRF	49% Loan Forgiveness	\$25	M	
2026 Supplemental SRF	49% Loan Forgiveness	\$25	M	
2022 Disadvantaged PFAS Grant	100% grant	\$10	M	
2023 Disadvantaged PFAS Grant	100% grant	\$10	M	
2024 Disadvantaged PFAS Grant	100% grant	\$10	M	
2025 Disadvantaged PFAS Grant	100% grant	\$10	M	
2026 Disadvantaged PFAS Grant	100% grant	\$10	M	
TOTAL INCREASE IN FUNDING(2022-2026) >>>>>		\$567	M	

DEMAND FOR DRINKING WATER INFRASTRUCTURE FUNDING							
Aging Infrastructure			\$2,000 M	(probably higher)			
Lead Service Line Replacement			\$100 M				
PFAS Mitigation			\$200 M	(probably much higher)			
Manganese Treatment			\$60 M				
New Development			??				
<b>TOTAL</b>			<b>\$2,360 M</b>				

# Source Water Protection

- Air emission sources of contamination requires a whole new way of addressing source water protection
- Most “pre-PFAS” contamination sites in NH exceed NH’s PFAS MCLs. Hundreds of sites have been closed without looking for PFAS
- Wastewater is a source(conveyor) of PFAS contamination. Many public water systems in NH have wells and septic systems on the same property.
- Water systems, states and USEPA cannot ensure source water protection alone.

# Class V Underground Injection Control (UIC) Wells

- Wastewater discharges to groundwater are regulated in NH
- Certain wastewater discharges to groundwater are regulated by the federal government as “Underground Injection Control” (UIC) under federal Safe Drinking Water Act
- NH only has Class V UIC wells or other shallow wastewater discharges to groundwater, which are generally "low-tech" and depend on gravity to infiltrate water and wastewater into shallow groundwater/drinking water aquifers. Dry wells, cesspools and septic system leach fields are examples.
- Similar wastewater discharges to groundwater discharges such as spray irrigation, rapid infiltration basins, wastewater reuse have the same type of groundwater impacts but are not Class V wells.



# Class V Wells

- May present one of the largest source water protection opportunities for PFAS
- Class V wells SDWA requirements are not well known among environmental practitioners
- Class V UIC programs generally do not receive sufficient funding for robust administration under the SDWA



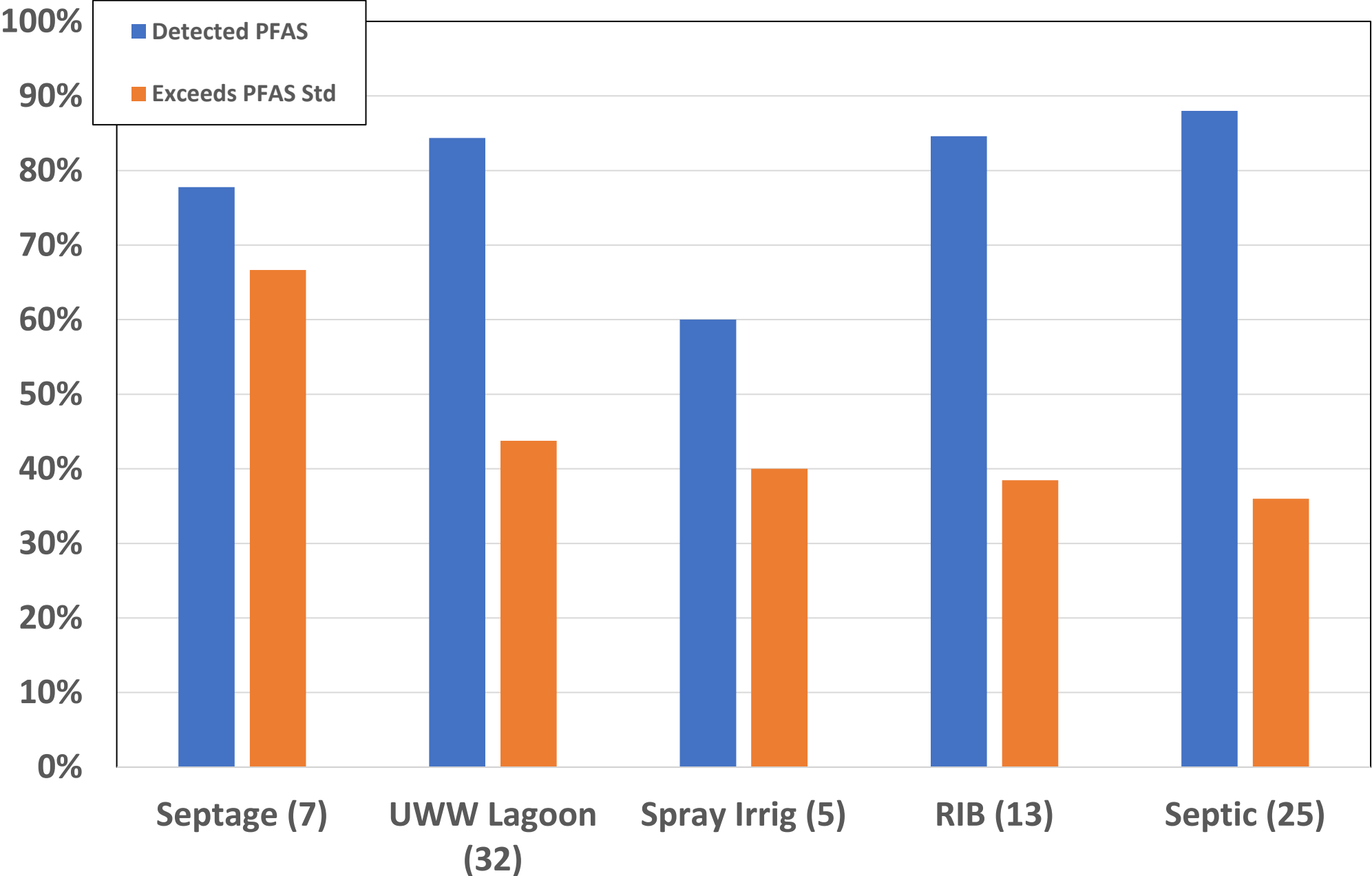
# Provisions of Class V Wells - SDWA

- Cannot cause a violation of MCL in underground sources of drinking water
- Burden of proof is on the discharger
- States/USEPA may take actions to require entities get permit, prevent contamination or close the injection well

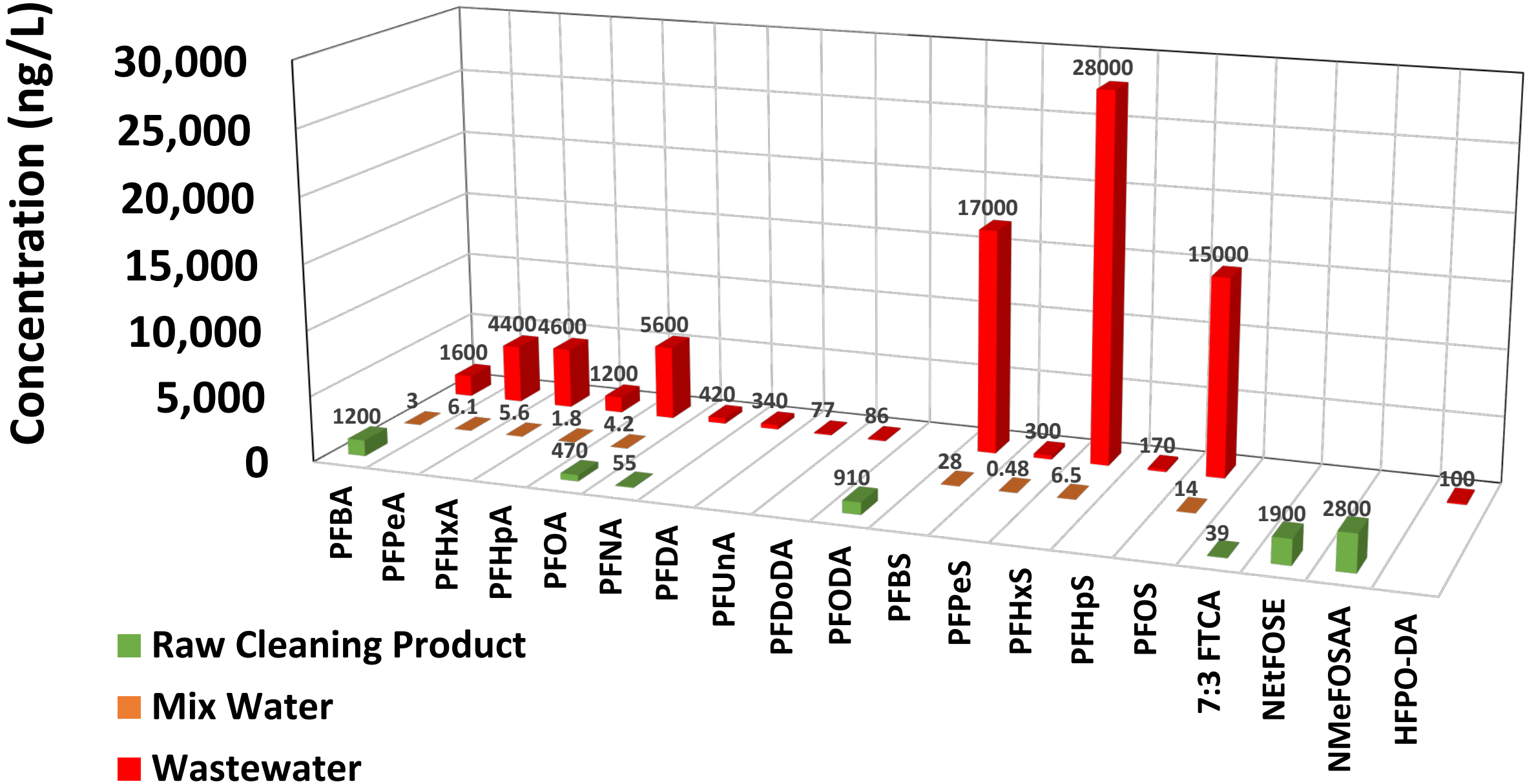




Groundwater Discharge Permit Program  
PFAS Detections in Groundwater Monitoring Wells



# Commercial Carpet Cleaning Wastewater



# Recommendations for PFAS/Class V Wells/Groundwater Discharges

- 1) Increase funding for states to administer the UIC programs.
  - Current funding for NH does not cover a full staff position
  - Funding has not changed for years
  - Funding does not facilitate the appropriate level of effort to adequately administer the UIC program – especially with new PFAS MCLs
- 2) Include other groundwater discharges other than just UICs
- 3) Consider revising federal UIC regulations to consider common sense provisions when regulating contaminants that are:
  - Regulated at the ppt or ppq levels
  - Widespread, mobile, persistent
  - Costly to remove from wastewater
- 4) Aggressive pollution prevention initiatives for PFAS – We cannot sample and regulate our way out of this problem.



# 5) Complete a Follow-up to USEPA’s 1999 Class V Underground Injection Control Study to include PFAS and 1,4-dioxane

• Agricultural Drainage Wells	• Special Drainage Wells	• Food Processing Disposal Wells	• Geothermal Direct Heat Return Flow Wells
• Stormwater Drainage Wells	• Experimental Wells	• Sewage Treatment Effluent Wells	• Heat Pump/Air Conditioning Return Flow Wells
• Carwashes Without Undercarriage Washing or Engine Cleaning	• Aquifer Remediation Wells	• Laundromats Without Dry Cleaning Facilities	• Saline Intrusion Barrier Wells
• Large-Capacity Septic Systems	• Geothermal Electric Power Wells	• Spent Brine Return Flow Wells Mine Backfill Wells	• Aquifer Recharge/Recovery Wells
• In-Situ Fossil Fuel Recovery Wells	• Solution Mining Wells	• Aquaculture Wells	• Subsidence Control Wells
• Non-contact Cooling Wells			

**Questions/Discussion?**