



November 16, 2023

*Department of Environmental Quality
Private Well Sampling Near the Sampson County Landfill*





Discussion Topics

- PFAS at the State and National level
- DEQ's Broader PFAS work across the state
- Potential Sources of PFAS
- Sampson County Well Data
- Next Steps

“PFAS” or Per- and Poly-fluoroalkyl Substances



- **Manufactured Chemicals**
 - Used in industry and consumer products since the 1940s.
 - Many break down slowly and can build up in people, animals and the environment over time.
 - Increasing number of scientific studies are showing exposure to some PFAS in the environment are linked to adverse health effects in humans and animals
 - Not naturally occurring
- **States**
 - Developing state level regulations (groundwater / surface water)
- **EPA**
 - Proposed drinking water regulations



EPA Proposed Maximum Contaminant Levels (MCLs)

- First primary drinking water standards for PFAS proposed in March 2023.
- MCLs are regulatory values.
- Expected to be finalized in late 2023. Compliance requirement effective 2026.

Compound	Proposed MCLG	Proposed MCL (enforceable levels)
PFOA	Zero	4.0 (ppt or ng/L)
PFOS	Zero	4.0 ppt
PFNA	1.0 (unitless) Hazard Index	1.0 (unitless) Hazard Index
PFHxS		
PFBS		
HFPO-DA (GenX Chemicals)		

$$\text{Hazard Index} = \left(\frac{[\text{GenX}_{\text{water}}]}{[10 \text{ ppt}]} \right) + \left(\frac{[\text{PFBS}_{\text{water}}]}{[2000 \text{ ppt}]} \right) + \left(\frac{[\text{PFNA}_{\text{water}}]}{[10 \text{ ppt}]} \right) + \left(\frac{[\text{PFHxS}_{\text{water}}]}{[9.0 \text{ ppt}]} \right)$$



What is North Carolina doing?

North Carolina DEQ Action Strategy for PFAS

June 7, 2022



PROTECTING COMMUNITIES

We will continue to identify and notify those who may be at risk of exposure, investigate the human health risks and expand the base of scientific knowledge for North Carolina-specific PFAS compounds.



PROTECTING DRINKING WATER

We will work to minimize future releases of PFAS to drinking water sources by setting regulatory standards and driving actions to prevent future PFAS pollution.



CLEANING UP EXISTING CONTAMINATION

We will continue to hold responsible parties accountable for remediating known PFAS contamination sites affecting drinking water supplies and other receptors to protect human health and the environment.

- DEQ is working to protect residents of North Carolina by identifying and notifying those who may be at risk of PFAS exposure in drinking water.
- DEQ is working to identify potential sources of PFAS impacting communities.
- DEQ is proposing regulatory standards to prevent future PFAS pollution.
- DEQ is working to require remediation of known PFAS sites affecting drinking water supplies and other receptors.
- Key takeaways- Research, Regulate and Remediate



DEQ PFAS Monitoring & Investigations

Groundwater

- Supports approximately 50% of drinking water use.
- PFAS testing at ambient groundwater monitoring network of over 700 wells under way.

Public Water Supply Systems

- Supplies water to 9,094,537 people
- PFAS data from 380 municipal drinking water systems in 97 counties are available. Resampling of top 50 sites in 2022 showed 43 sites with concentrations above the proposed drinking water levels.
- Sampling for 655 smaller privately owned systems, schools and daycares nearing completion.



DEQ PFAS Monitoring & Investigations

Surface Water

- PFAS data from 27 Public Owned Treatment Plants in the Cape Fear River Basin are available.
- DEQ is currently adding PFAS sampling requirements to Industrial discharges known to discharge PFAS or targeted by the EPA as having wastewaters containing PFAS.
- DEQ is adding PFAS sampling to Public Owned Treatment Plants known to discharge PFAS or being identified by EPA as having wastewaters containing PFAS.

Private Wells

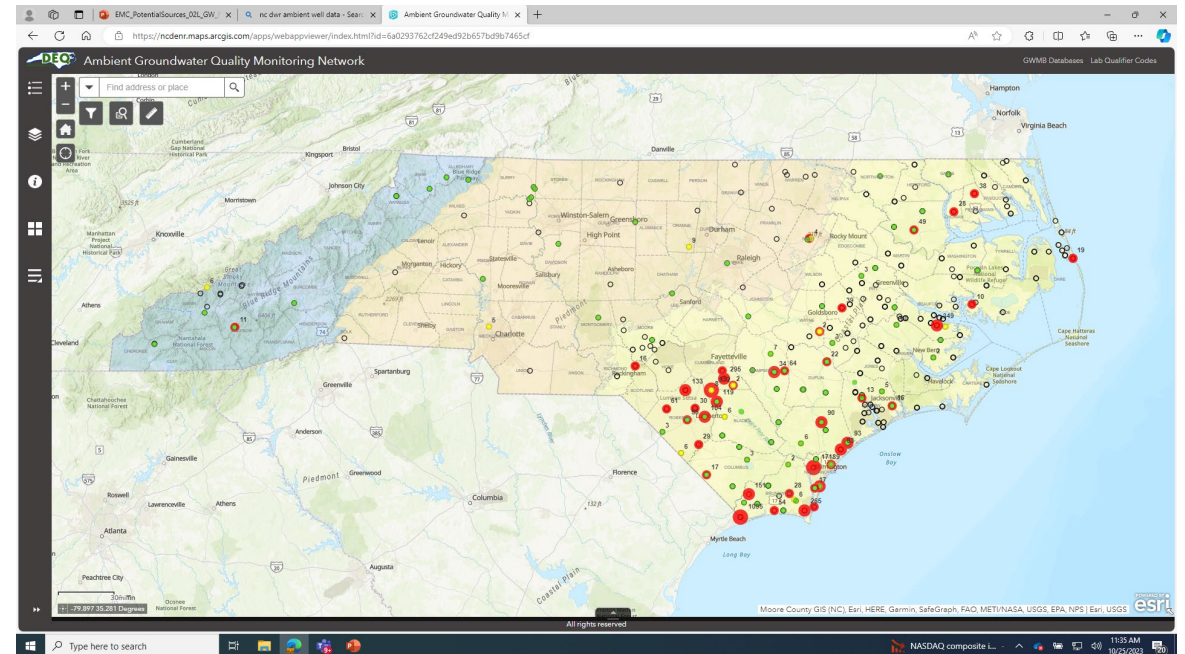
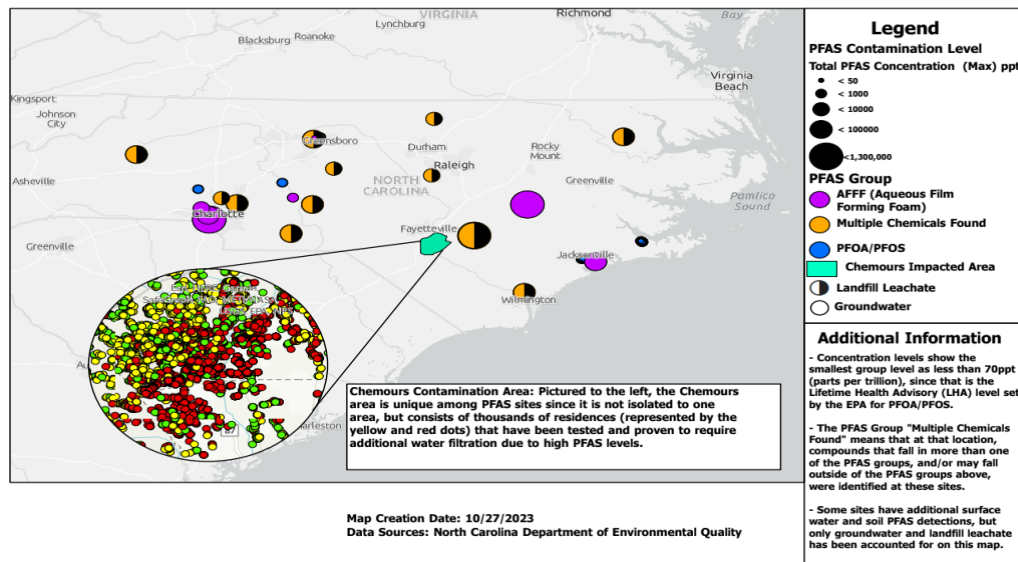
- Extensive private well testing in multiple counties affected by contamination from a PFAS manufacturing facility.
- Targeted private well testing near fire fighting foam (AFFF) manufacturing sites, fire training facilities, and airports.



PFAS Groundwater Impacts in NC

- Information compiled across DEQ Divisions
- Data includes site specific and ambient groundwater data
- Additional Sites are being evaluated

NC DEQ Division of Waste Management PFAS Data by Concentration and PFAS Group



Examples of Potential PFAS Sources

Military Bases

Fire Training
areas where
AFFF was used

Airports (Where
AFFF has been
used)

Metal Plating
facilities

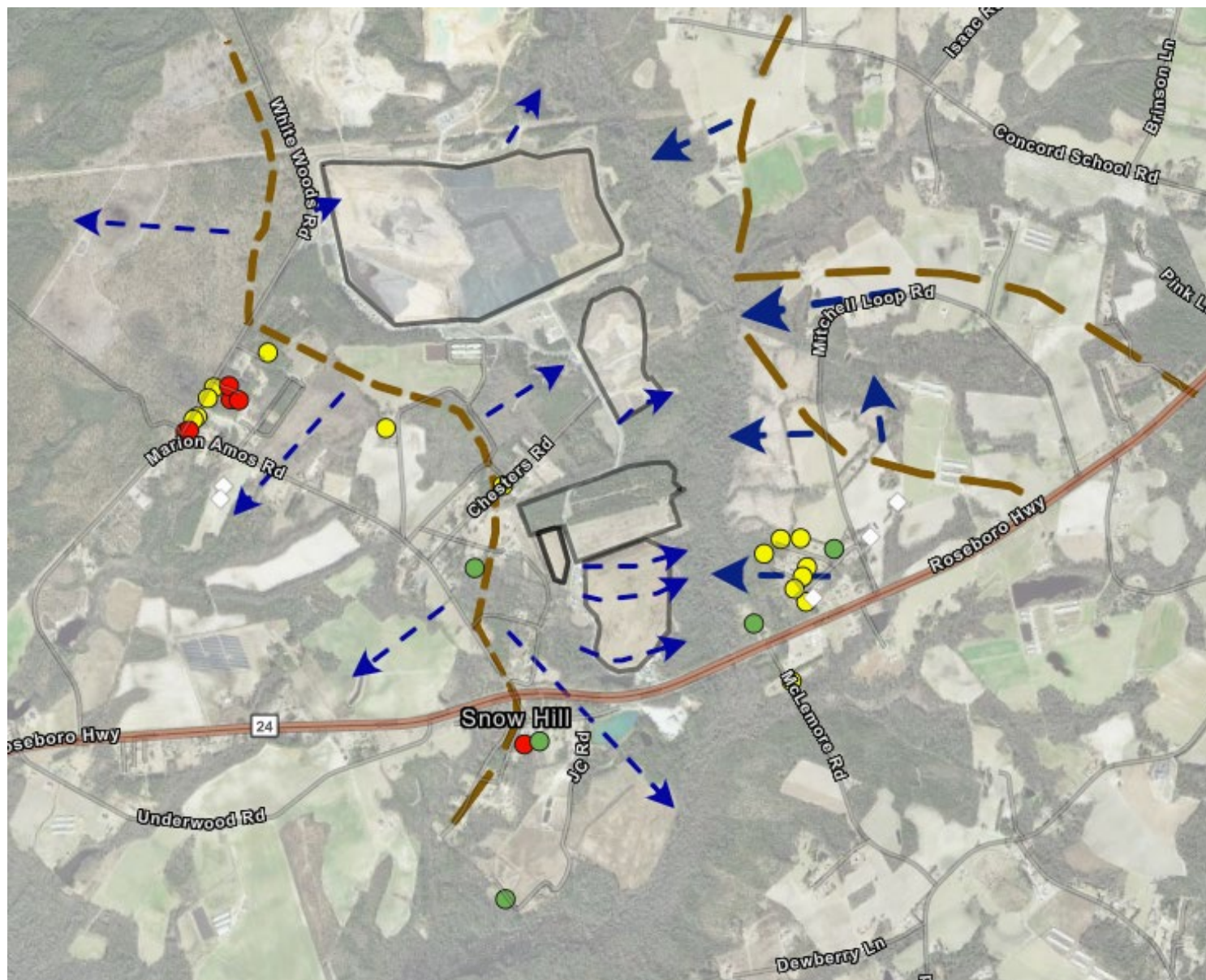
Chemical
Production
Facilities

Landfills

Paper and pulp
manufacturing




Sampson County Landfill PFAS Sampling



- In July of 2023 DEQ asked NC landfills to test for PFAS
- DEQ split PFAS samples with the GFL landfill in September
- Groundwater, surface water, soil and leachate were sampled

Inferred GW Flow Direction 

Approximate Drainage Divide 



Sampson County Landfill PFAS Data



- NC Municipal solid waste, industrial and construction & demolition landfills are testing for PFAS

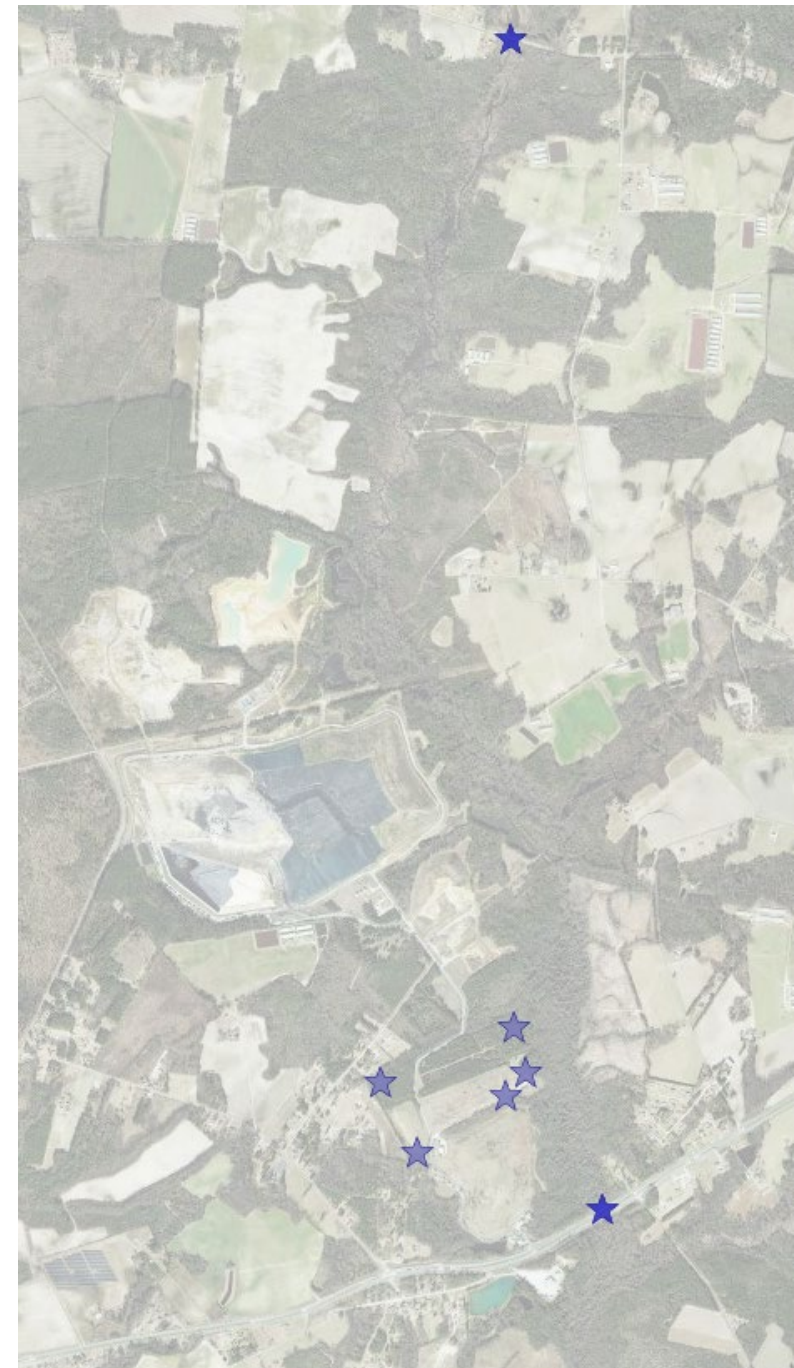
	Average Total PFAS (ng/L)
82-01 Groundwater Wells	3,628
82-02 Groundwater Wells	6,477

ng/L = ppt



Continued PFAS Work at the Landfill

- Split Sampling at the Sampson County Landfill in mid-November to coincide with routine semi-annual monitoring
- 5 groundwater monitoring wells & 2 surface water monitoring points for closed, unlined MSW that Sampson County is responsible for monitoring



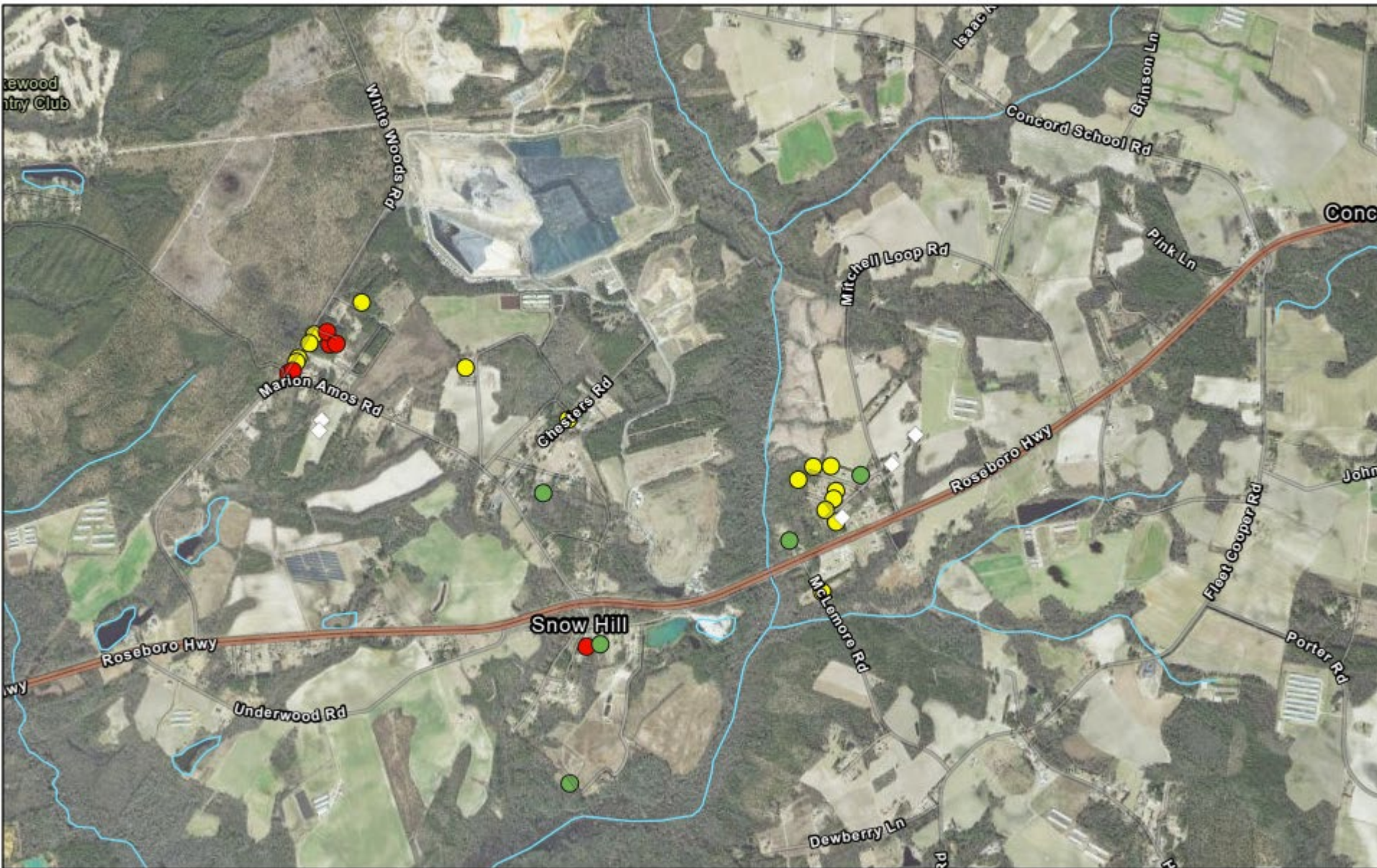
Well Sampling

Sampling Date		Wells to be Sampled	Wells Sampled	Wells Not Sampled	Reason
10/9/2023		5	5	0	
10/11/2023		9	9	0	
10/17/2023		9	6	3	1 well not operational, 2 properties on County water
10/23/2023		7	4	3	No power to 1 well, 2 properties on County water
10/30/2023		12	2	10	Wells either not operational, or properties on County water
11/7/2023		5	5	0	2 wells on one property
Total Wells for Sampling		47	31	16	

DEQ Private Well Sampling Summary

- DEQ reached out via letter and went door to door in the communities to offer sampling.
- DEQ colleagues performed the private well sampling but also need permission to access properties.

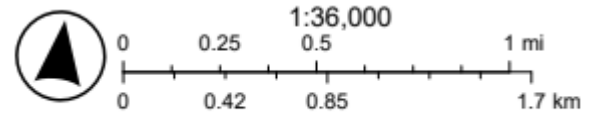
Area Surrounding the Sampson County Landfill



Private Well Results Sampson sampled through November 7

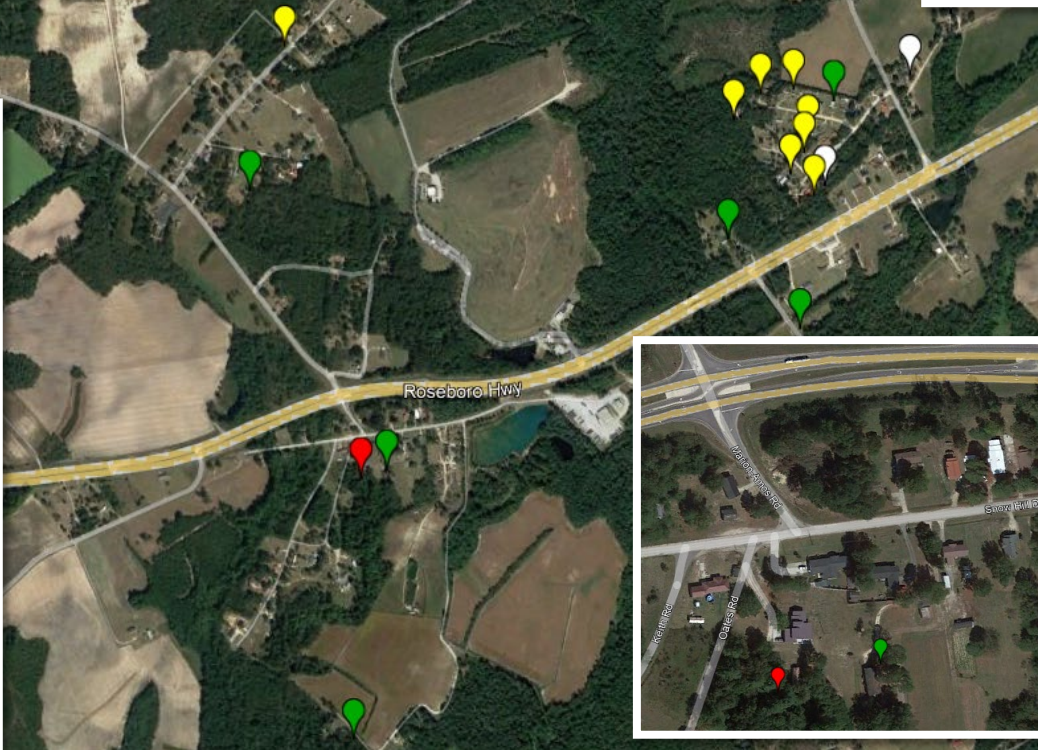
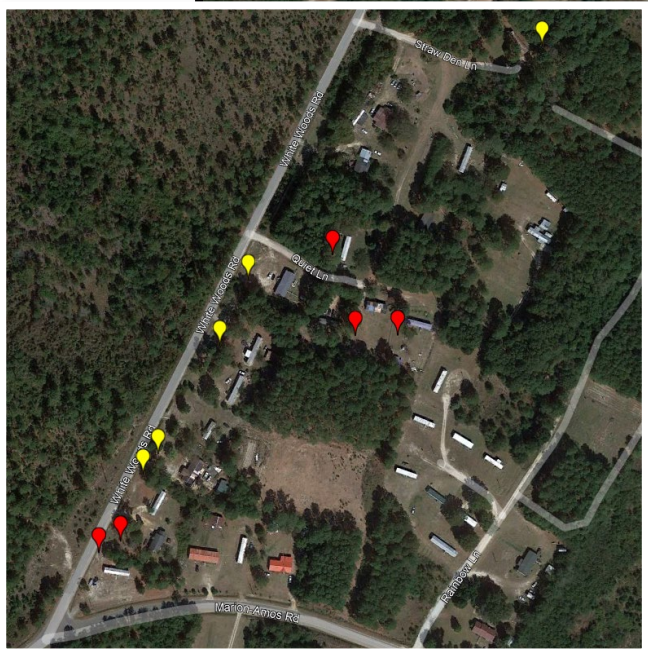
- Below Standards
- Exceeds Standards
- No Detections
- ◇ Results Pending





- Streams
- World Imagery
- Low Resolution 15m Imagery



NC CGIA, Maxar, State of North Carolina DOT, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US





-  Detection Exceed EPA MCLs
-  Detection Below EPA MCLs
-  No Detection
-  Results Pending



Private Well Water Results Table

Sample Date	Total PFAS	Total Attachment C	Total Attachment C plus Table 3+	No Detects (ND)	Hazard Index MCL 1.0	PFOA (ng/L) MCL 4	PFOS (ng/L) MCL 4
		♦					
10/9/2023	0.00	0.00	0.00	ND	0.00		
10/9/2023	0.00	0.00	0.00	ND	0.00		
10/9/2023	9.82	2.79	9.82		0.00		
10/9/2023	20.40	5.22	17.98		0.00		
10/9/2023	0.00	0.00	0.00	ND	0.00		
10/11/2023	102.00	15.56	56.42		0.36	5.33	22.3
10/17/2023	0.00	0.00	0.00	ND	0.00		
10/11/2023	15.04	1.03	12.40		0.00	0.719	1.92
10/11/2023	89.53	12.65	43.53		0.40	9.57	17.8
10/11/2023	38.28	6.20	17.69		0.00	1.14	1.06
10/11/2023	13.19	2.17	11.24		0.00	0.839	1.11
10/17/2023	46.10	7.95	26.36		0.19	3.75	5.46
10/11/2023	97.87	19.66	41.46		0.15	4.7	
10/11/2023	16.93	2.11	12.94		0.00		0.87
10/11/2023	28.26	4.12	18.09		0.00	0.761	0.958
10/11/2023	115.35	11.90	31.10		0.40	17.2	4.68

Sample Date	Total PFAS	Total Attachment C	Total Attachment C plus Table 3+	No Detects (ND)	Hazard Index MCL 1.0	PFOA (ng/L) MCL 4	PFOS (ng/L) MCL 4
		♦					
10/17/2023	0.00	0.00	0.00	ND	0.00		
10/17/2023	0.97	0.97	0.97		0.00		
10/17/2023	13.76	3.34	13.76		0.00		
10/17/2023	0.00	0.00	0.00	ND	0.00		
10/23/2023	18.33	3.91	14.20		0.02	1.11	2.34
10/23/2023	21.68	2.97	11.54		0.09	1.64	
10/23/2023	1.46	0.74	0.74		0.00		
10/23/2023	16.55	1.99	13.60		0.00		
10/30/2023	11.96	1.80	10.71		0.00		
10/30/2023	45.53	6.75	24.76		0.19	3.86	5.37
11/7/2023							
11/7/2023							
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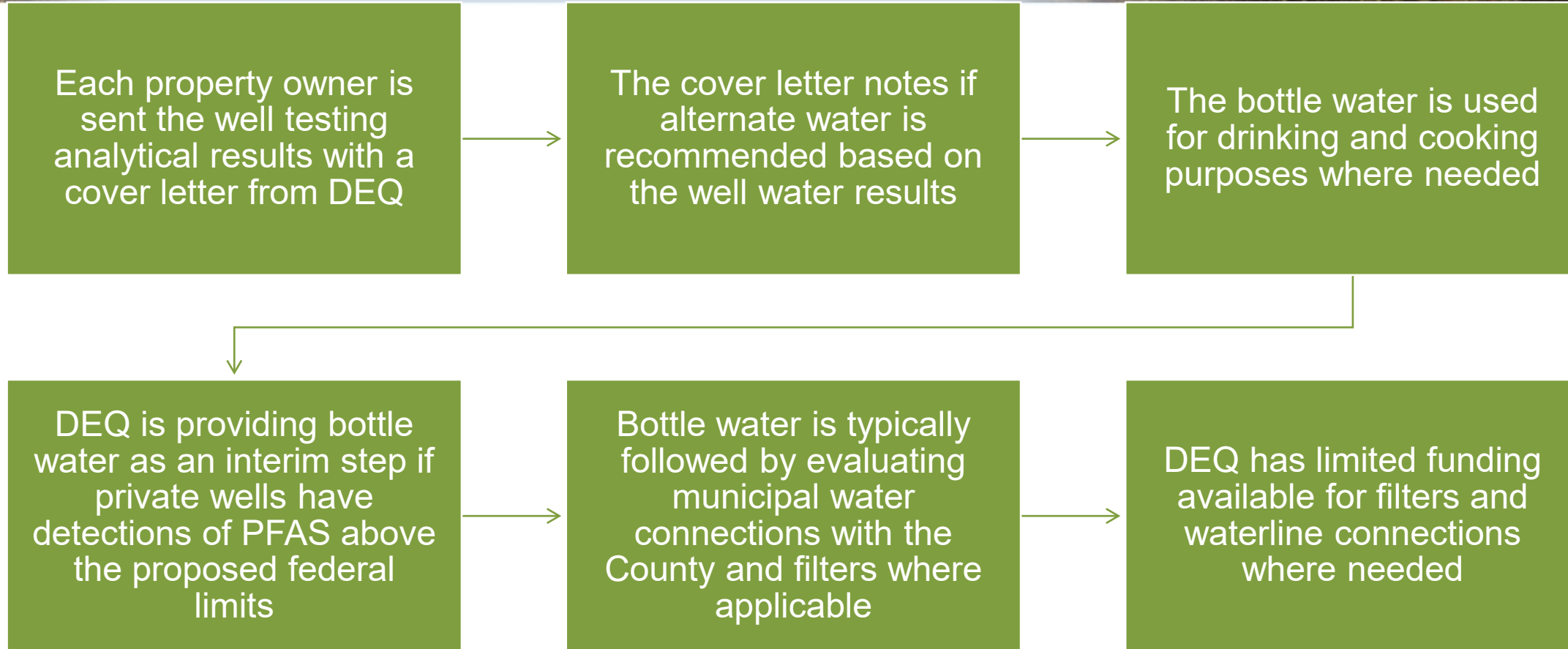
Results Pending

- Private well action criteria: PFOS or PFOA at 4ppt or above

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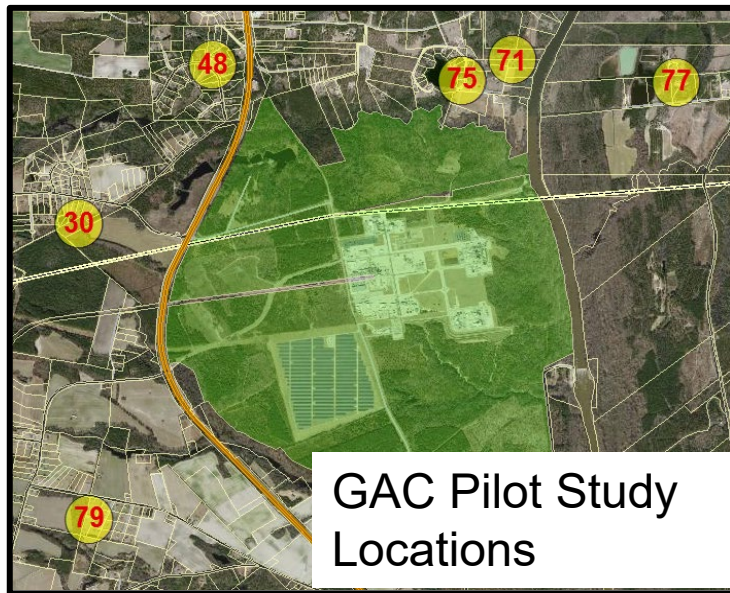
Next Steps After Private Well Testing for PFAS



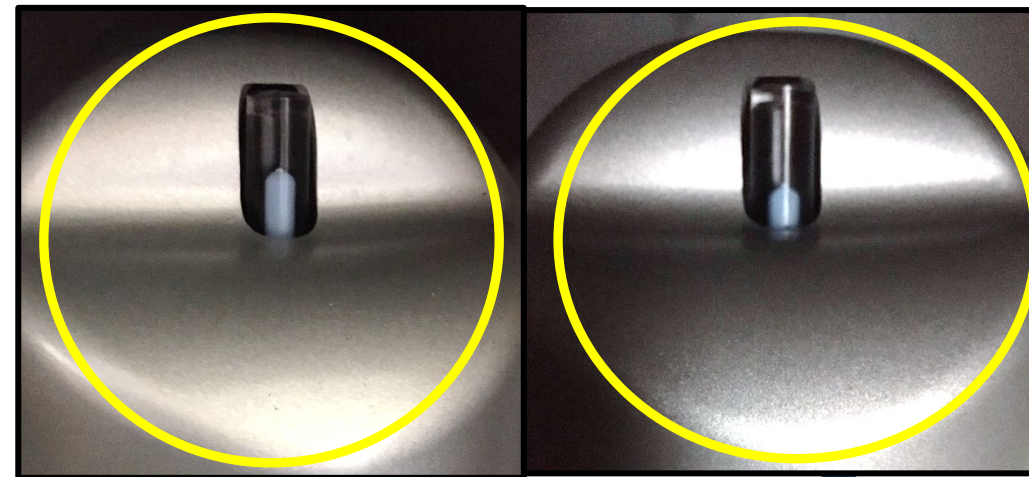
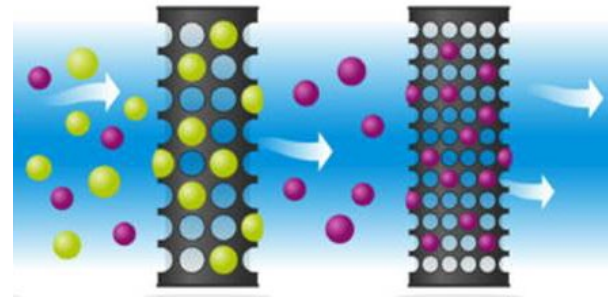
NCDEQ PFAS Filtration System Studies



*Residential
filtration
studies*

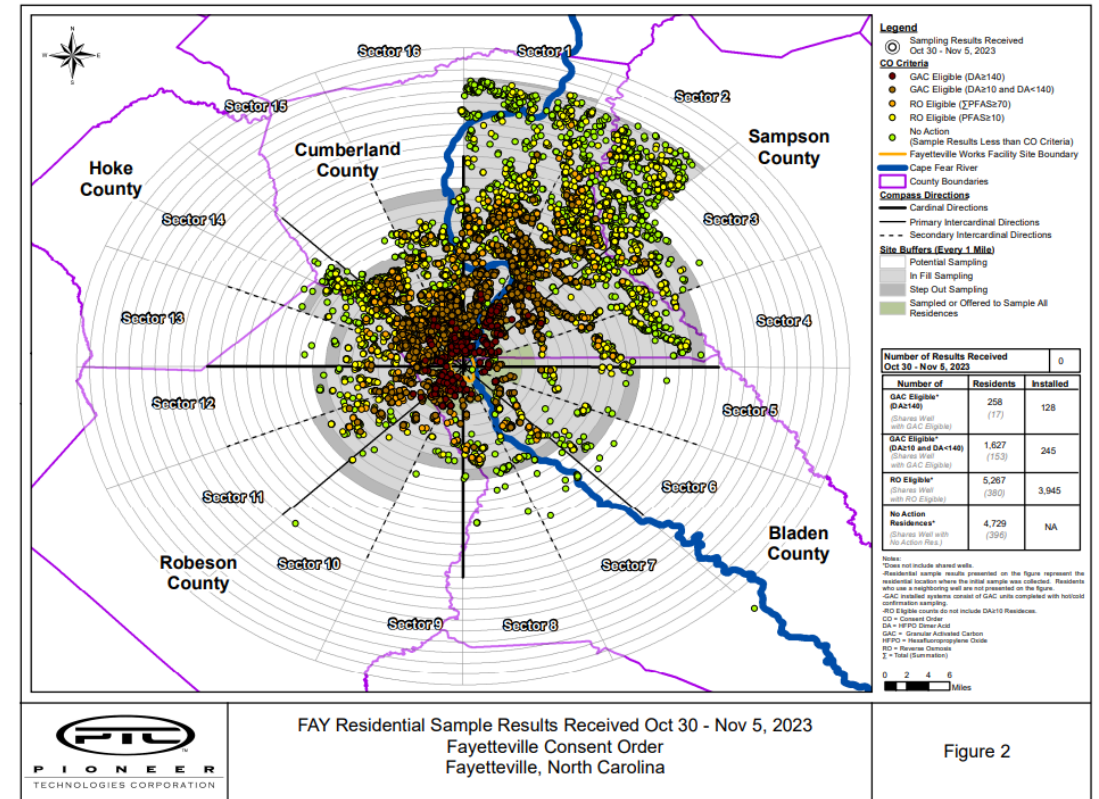


GAC Pilot Study
Locations



Chemours Offsite Private Well Testing (2018- present)

- Found high levels of PFAS compounds in onsite monitoring wells at Chemours in Bladen County
- Tested private wells on properties adjacent to Chemours first and found high levels
- DEQ has been testing additional private wells around the Chemours plant (over 180 private wells have been tested)
- Current private well testing by Chemours extends into Sampson County



FAY Residential Sample Results Received Oct 30 - Nov 5, 2023
 Fayetteville Consent Order
 Fayetteville, North Carolina

Figure 2

Summary Points Related to PFAS



Sampling of private wells and at the landfills for PFAS will continue



It is important to get your private well tested for PFAS if you are in an area where PFAS are known to be present



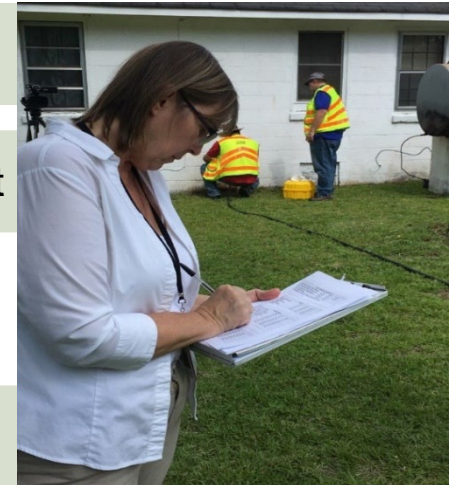
Effective treatment is available for private wells and municipal water



DEQ will be a resource for the community on this subject and will share updates on this front



Reach out to DEQ at 919-707-8200 or wellsamplingQuestions@deq.nc.gov



Questions ?

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Department of Environmental Quality

