AGENDA MATERIAL
DATE 8/10/21 ITEM NO. RA 13

Board of Supervisors Memorandum

August 10, 2021

Update on PFAS Clean-up Efforts

Background

The Arizona Department of Environmental Quality (ADEQ) allocated $2 million to the City of Tucson/Tucson Water to assist in addressing the shutdown of the Tucson Airport Remediation Project (TARP) treatment facility. The funds will be used for the construction of a pipeline to transport treated water from the TARP facility into the Santa Cruz River and/or the Reclaimed Water System.

Tucson Water stated at a recent meeting that any water released into the Santa Cruz River would be treated to an operating level of <18 ppt for PFAS. The County strongly recommends that this number be lowered as much as possible.

Attached is an update from Ursula Nelson, Director of the Pima County Department of Environmental Quality (PDEQ), on the current PFAS efforts by the City of Tucson/Tucson Water.

Recommendation

I recommend that the Board of Supervisors approve a recommendation that the City of Tucson/Tucson Water treat any new water discharges in the Santa Cruz River to less than 18 ppt for PFAS to protect groundwater quality and limit the spread of PFAS to other wells.

Sincerely,

C.H. Huckelberry
County Administrator

CHH/anc – August 5, 2021

Attachment

c: Jan Lesher, Chief Deputy County Administrator
Carmine DeBonis, Jr., Deputy County Administrator for Public Works
Ursula Nelson, Director, Pima County Department of Environmental Quality
Diana Durazo, Special Projects Manager, Pima County Administrator's Office

PIMA COUNTY
ENVIRONMENTAL QUALITY

M E M O R A N D U M

DATE: August 5, 2021

TO: C. H. Huckelberry
County Administrator

FROM: Ursula K. Nelson, P.E. UKN
Director

RE: Next Steps for PFAS Activities

This memorandum is an update to our presentation at the July 6 Board of Supervisors meeting (attached). The County does not currently have regulatory authority regarding PFAS in the environment but continues to follow this issue closely to participate in discussions that affect public health and the environment. As mentioned at that meeting, PFAS issues are rapidly evolving and there are frequent changes and new information.

The City of Tucson Water has recently announced their plans to discharge treated water from the Tucson Airport Remediation Project (TARP). The $2 million project is being designed to discharge 3.5 million gallons per day into the Santa Cruz River just north of Irvington Road or to the Reclaimed Water System (RWS). Construction of the outfall into the Santa Cruz River has begun and the design of the pipeline transporting the treated TARP water to the RWS is completed. Flow in the Santa Cruz is expected to begin in early October, 2021 and the connection to the RWS is planned to be completed by spring 2022. With this schedule we anticipate ADEQ will send a public notice by early September for the Arizona Pollutant Discharge Elimination System permit that sets the Maximum Allowable Discharge Limitations.

The treated water planned as a new discharge from the TARP to the Santa Cruz River will infiltrate into the sands and percolate into a porous portion of the aquifer, carrying potential contaminants with it. The added water creates a recharge mound beneath the stream causing lateral flow. Also the water flowing in the river is within 1000 feet of a well with PFAS greater than 70 ppt. The movement of pollutants in the aquifer should be discouraged. The impact from the new discharge to the Santa Cruz River is anticipated to cause less damage compared to leaving the high concentrations of PFAS in the aquifer that are currently moving down gradient and contaminating drinking water wells. As the PFAS plume migrates towards the TARP recovery wells the concentrations are expected to increase and great care needs to be expended to protect the aquifer.

Treating the PFAS contaminated water is a reasonable approach to protecting groundwater quality, especially given that the project will recover PFAS polluted water and limit its spread to other wells. We recommend the standard for the new discharge to this new location be set to 18ppt or lower for both Perfluorooctanesulfonic Acid (PFOS) and Perfluorooctanoic Acid (PFOA).

Additional funds will be needed to pay for the pump-and-treat system for the PFAS contaminated

groundwater. If the clean-up is funded by the sources of the pollution, the local governmental agencies do not have to divert funding for this new cost. The largest cost of groundwater contamination is the clean-up as the process takes decades to complete.

We are available to discuss this further at your convenience.

Attachment

c: Carmine DeBonis Jr., Deputy County Administrator

MEMORANDUM

Date: June 18, 2021

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator

Re: **Update on Per- and Polyfluoroalkyl Substances in Pima County**

Per- and polyfluoroalkyl substances (PFAS) are a class of more than 3,000 man-made chemicals widely used in common household consumer products including non-stick pans, stain protection coating on textiles (fabrics, upholstery, carpets), as well as the coating of common food packaging and even dental floss. Significantly, these compounds are also widely used in the military and firefighting foams. The most common route of human exposure to this class of chemicals is through ingestion primarily of food (72%), but also from water (22%) and dust (6%).

This class of compounds have been the source of emerging health concerns. Although the science is still in its infancy, epidemiologic studies suggest that human exposure as evidenced by serum PFAS levels may be associated with human disease including increased risks for certain cancers, impaired kidney, liver and thyroid function, immune system disorders, and developmental issues. Although these associations are very concerning, they do not in themselves establish causality. A good summary of the current state of knowledge regarding the human impacts of PFAS exposure is addressed in a detailed report by the University of Arizona College of Public Health and included in my memorandum of January 29, 2020.

It should be noted that although the Environmental Protection Agency (EPA) has identified this class of compounds as "emerging contaminants of concern." There are no national regulatory standards for the presence of these contaminants in drinking water. Instead the EPA has established a non-regulatory, non-enforceable, drinking water "health advisory level" for two of these compounds (perfluourooctanoic acid and perfluorooctane sulfonic acid); set at 70 parts per trillion.

On February 2, 2020, I followed up with a report on the status of PFAS received and conveyed by the Pima County sewerage system. I provided an additional communication on October 29, 2020, related to restoring land application of biosolids based on an assessment demonstrating low PFAS contamination risk.

On April 8, 2021, the EPA released a report entitled, Human Health Toxicity Values for Perfluorobutane Sulfonic Acid (PFBS) and Related Compound Potassium Perfluorobutane Sulfonate. Subsequently on April 27, 2021, EPA Administrator Regan established a new

"EPA Council on PFAS" charged to better understand and ultimately reduce the potential risks caused by these chemicals. Based on these actions, it is clear that the human health impacts of PFAS contamination are being monitored by federal authorities and that subsequent regulatory action is likely to happen in this space, although not in the short term.

The Arizona Department of Environmental Quality (ADEQ) has continued to pursue a strategy to address the PFAS threat to Tucson's drinking water supply. ADEQ has dedicated funds from its Water Quality Assurance Revolving Fund to delineate and capture PFAS-contaminated groundwater from impacting additional drinking water production wells, in coordination with Tucson Water and the Air Force Civil Engineering Center.

On June 8, 2021, the City of Tucson announced that Tucson Water suspended operation of the Tucson Airport Remediation Project (TARP) water treatment facility, shifting water delivery of approximately 60,000 customers to a combination of recharged Central Arizona Project water and other groundwater sources not contaminated with PFAS.

The County has a limited role regarding PFAS exposure occurring as a result of drinking water given that we do not serve potable water. Additionally, the County does not have the regulatory authority in terms of ground water and water systems regulation until and unless the EPA establishes drinking water standards. Regardless of PFAS drinking water levels, any impactful future risk mitigation and exposure reduction strategies will need to address the exposures that are associated with food preparation and packaging.

The District 5 Supervisor has requested a presentation on this topic at the June 22, 2021 Board of Supervisors meeting. Attached is presentation that will be given by the Department of Environmental Quality for your advance review. Dr. Garcia will also be available during the Board meeting to respond to questions.

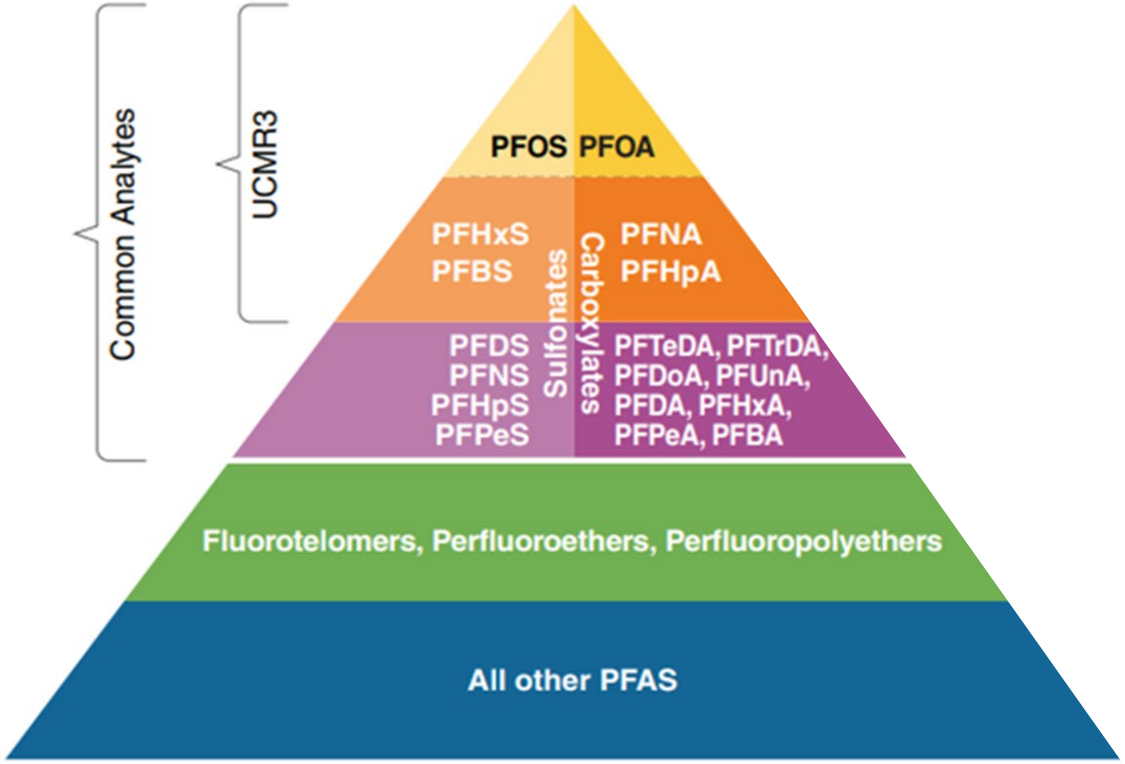
Attachment

c: Jan Lesher, Chief Deputy County Administrator
Carmine DeBonis, Jr., Deputy County Administrator for Public Works
Francisco García, MD, MPH, Deputy County Administrator and Chief Medical Officer, Health and Community Services
Yves Khawam, PhD, Assistant County Administrator for Public Works
Ursula, Nelson, Director, Environmental Quality
Jackson Jenkins, Director, Regional Wastewater Reclamation

National & Local Strategies to Minimize Impact of PFAS

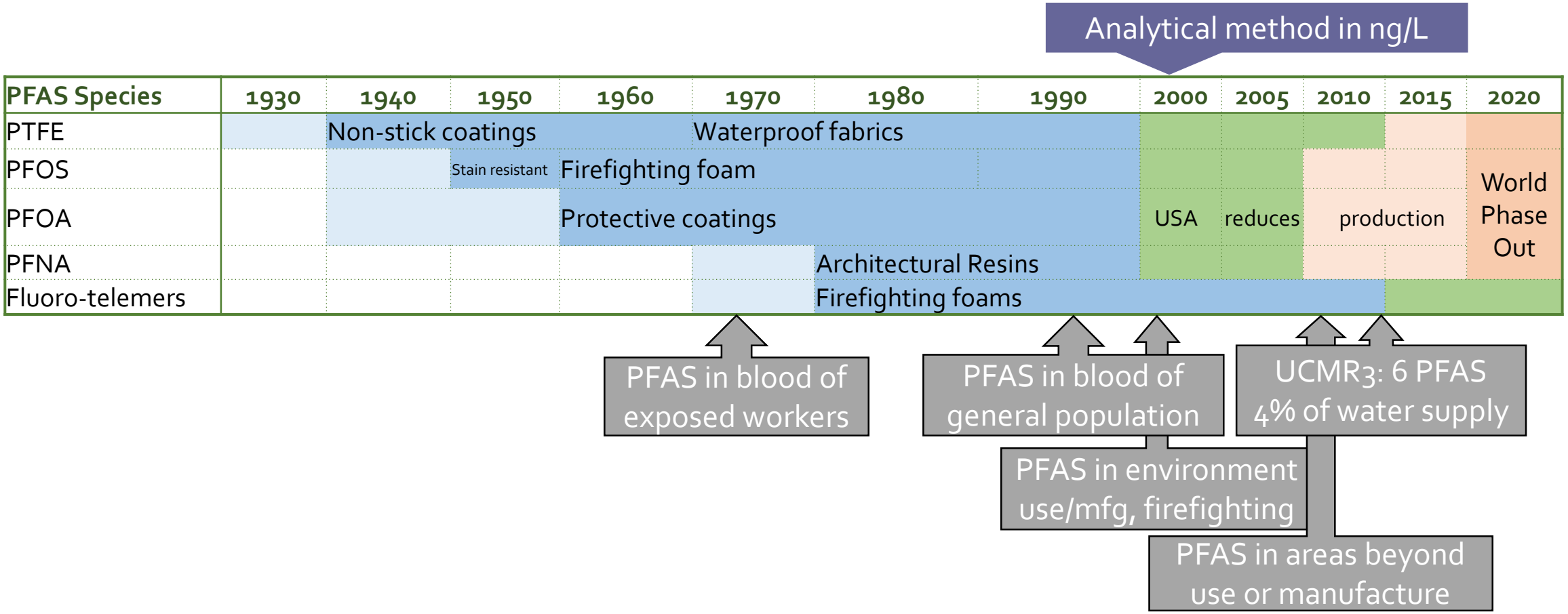
June 22, 2021 Pima County Board of Supervisors

Marie Light
Pima County Department of Environmental Quality



5,000 – 10,000 chemicals!

Discovery, Use and Phase-out of 'Forever Chemicals'



Estimated Primary Route of Exposure to PFAS is Ingestion

- 72% Food Ingestion
  - Fish caught in water contaminated by PFAS
  - Food packaged in material containing PFAS
    - Grease-resistant paper
    - Fast food containers/wrappers
    - Microwave popcorn bags
    - Pizza boxes
    - Candy wrappers
  - Non-stick cookware
- 22% Water Consumption
- 6% Dust Ingestion

Human Health Outcomes Associated with some PFAS Chemicals

	PFAS Type											
	Long-Chain								Short-Chain			
	PFOA	PFOS	PFHxS	PFNA	PFDeA	PFUA	PFDoA	PFOSA	PFHpA	PFBuS	PFBA	PFHxA
Cardiovascular disease	9 HR	3 HR				1 LR			1 HR			
Gastrointestinal		1 HR										
Musculoskeletal	5 HR	1 HR 1 LR	1 HR	2 HR								
Endocrine	2 HR 6 NC 1 LR	2 HR 7 LR	2 HR 1 NC	2 NC	2 NC	3 NC	4 NC					
Immune	13 HR	7 HR	6 HR	8 HR	6 HR	2 HR	5 HR			3 HR		
Reproductive	5 NC 6 HR	5 NC 3 HR	2 HR	1 NC		1 NC						
Pregnancy and Birth Outcomes		3 HR		1 HR	1 HR							
Developmental	5 LR 6 HR	3 HR	2 HR	1 HR	1 HR			1 HR				
Diabetes	2 LR 2 HR	4 HR		2 LR		3 LR						
Cancer	4 HR 2 LR	2 HR 1 LR	2 HR			1 HR		1 HR				
Hepatic	39 HR 1 LR	21 HR	3 HR	4 HR	3 HR	1 HR				1 HR		
Renal	16 HR	9 HR	2 HR	1 HR								

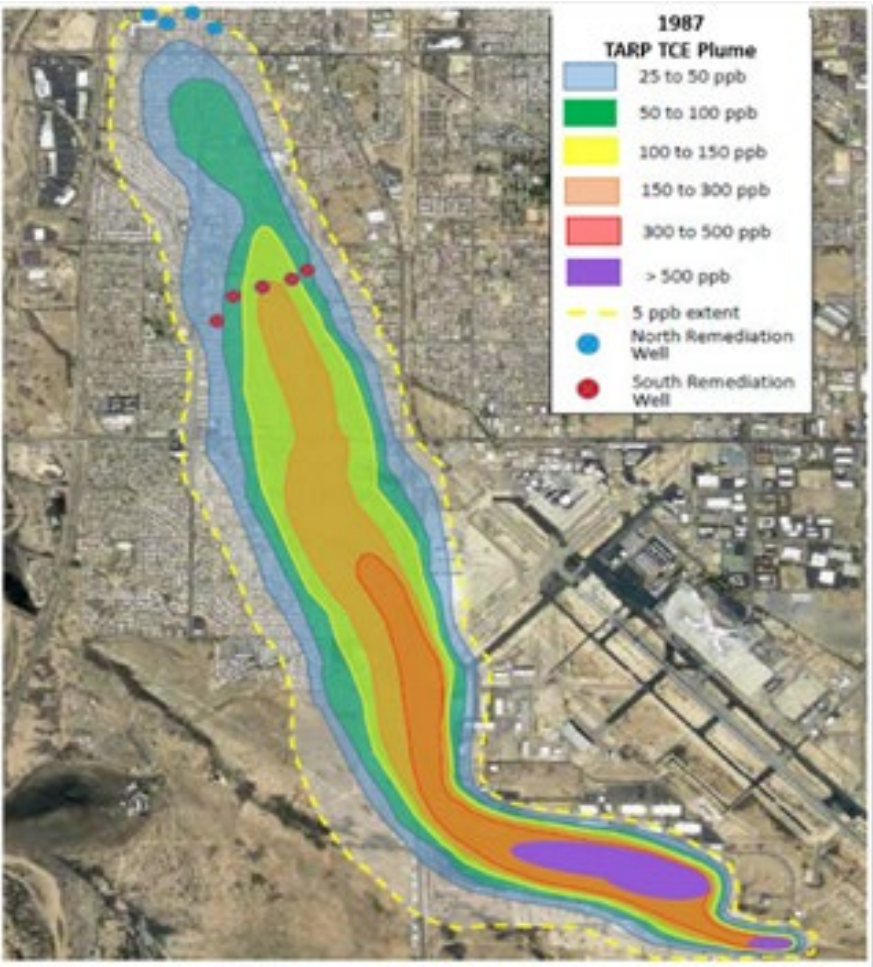
Long-Chain
- Persistent
- Bioaccumulation

Short-Chain
- Replacements
- Mobile
- Harder to remove

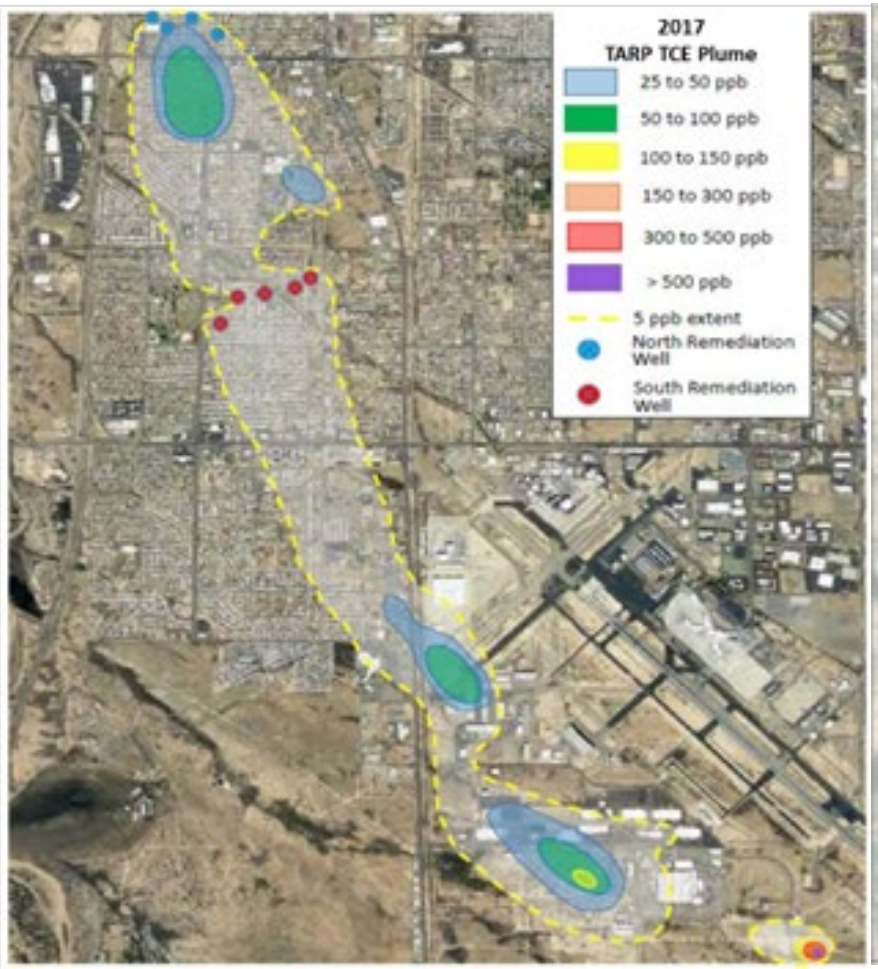
Explanation
- number of studies
HR – High risk
LR – Low risk
NC – Not clear

TCE Plume and PFAS Occurrence north of Airport

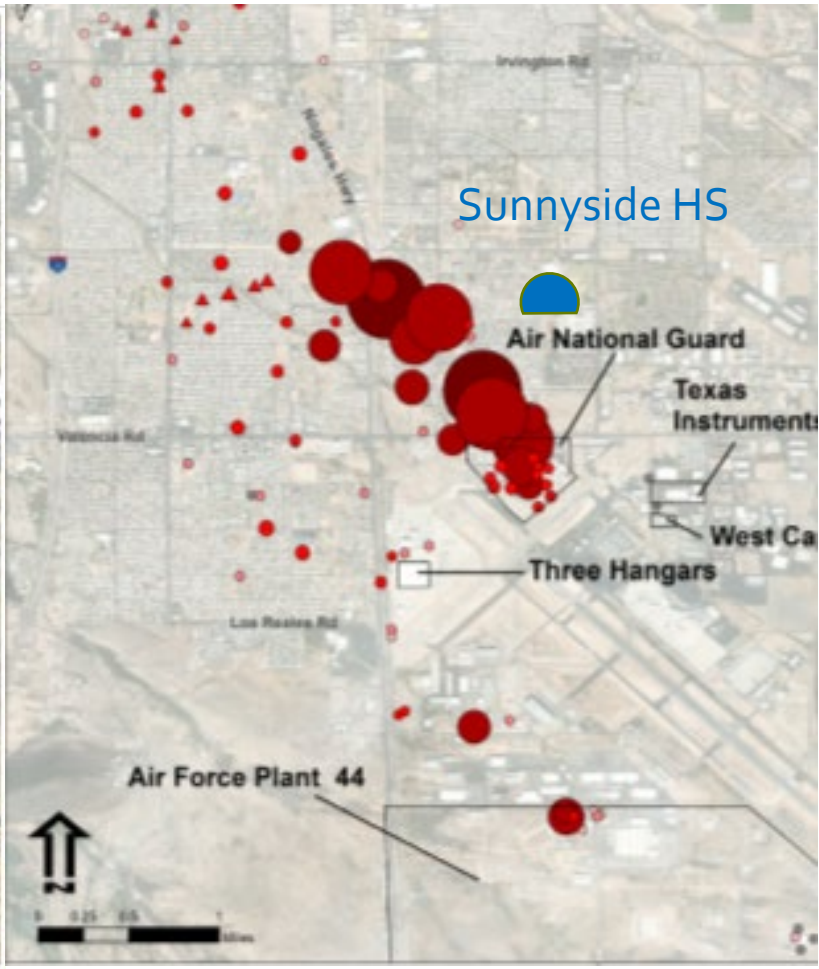
1987 Main TCE Plume



2017 Main TCE Plume

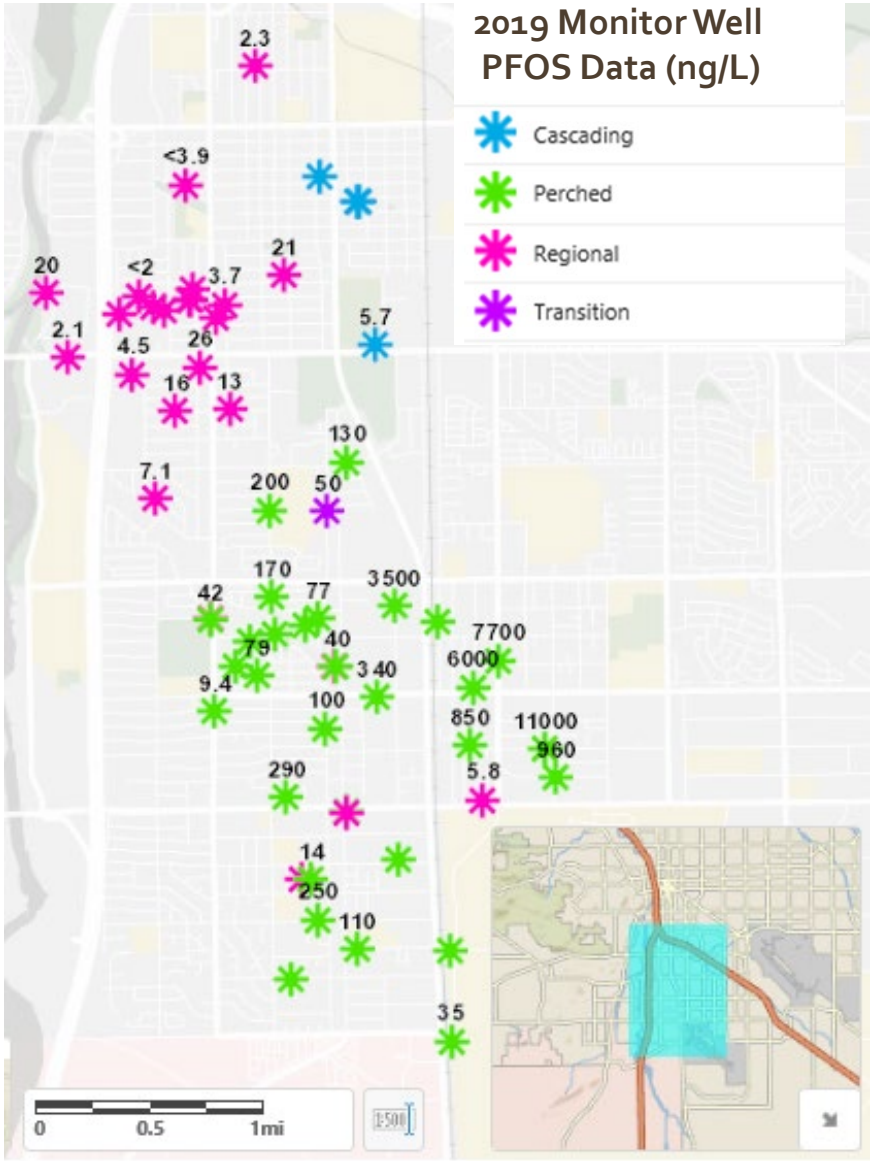


2021 Select PFAS*



Selected PFAS: PFOS, PFOA, PFHxS, PFHpA

PFAS in Monitor Wells and Potential in Private Wells



- EPA regulates Public Water Systems, not private wells
  - No unregulated contaminant monitoring requirements
  - No recommended criteria or standards
- Arizona policies
  - ADWR: Register all wells drilled in the state
  - ADHS: Health Consultations, analytical lab licensing
  - ADEQ: Regulates public water systems (PWS)
  - Pima County Health Department: Delegated authority for PWS
- September 2019 Awareness of PFAS in Monitor Wells
  - Concentrations are above health-based guidance level (70 ng/L)
  - Highest concentrations in perched aquifer
  - PFAS is migrating north northwest
  - Lateral extent is unclear
  - Private wells with potential exposed is unclear

Fall 2019 Local Study: Timeline of Activities

	Lapsed Time (days)
• September 11, 2019: Agencies exchanged water quality data and well inventories	0
• September 16, 2019: PDEQ submitted 1st list (those most likely to be operational)	5
• September 19, 2019: ADEQ sent 1st set of notices to 47 private well owners	8
• Information about PFAS in English and Spanish	
• Request permission to sample well at no cost to well owner	
• Offer to provide a safe source of water if the sampling shows	
• October 29, 2019: PDEQ submitted 2nd list (larger area)	48
• November 11, 2019: ADEQ sent 2nd set of notices to 44 private well owners	61

- ADEQ conducted sampling as well owners requested
- ADEQ provided results to well owners, and offered bottled water to those with positive results until a permanent source of safe water could be provided

Status of PFAS Activities for Public Drinking Water Systems

National level

- 2016: EPA sets health advisory level
  - PFOA & PFOS at 70 ng/L
- 2018: EPA develops analytical methods
- Dec'2019: EPA set to regulate PFAS
  - Develop an MCL using 70 ng/L
  - Use a screening level of 40 ng/L
- Jun'2020: PFAS is a toxic chemical
- Mar'2021: UCMR5 - 29 PFAS
- Mar'2021: EPA proposes effluent guidelines
- Apr'2021: EPA creates Council on PFAS
- May'2021: New Jersey DEP sets MCLs
  - PFOA 14 ng/L
  - PFOS 13 ng/L

Arizona and locally

- 2018-2019: water utilities sample wells
- 2018: Tucson Water sets operational PFAS target at 18 ng/L
- 2019-present:
  - Drilling monitor wells
  - Additional local studies as PFAS is identified
- April 27, 2021 Governor Ducey letter to DOD
  1. Share all PFAS data from DOD installations
  2. Develop preliminary conceptual site model for each facility
  3. Estimate time range of PFAS reaching public drinking water systems
  4. Conduct accelerated remedial investigations
  5. Design & install early response action to protect public drinking water system
- June 8, Tucson Water announce closure of TARP