Implementing a Proactive PFAS Program Using EC-SDC Grant Funding

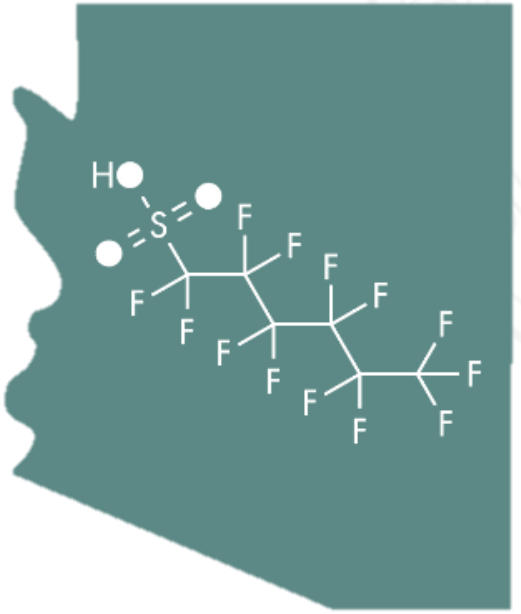
Sara Konrad, PFAS Project Manager

ADEQ Arizona Department of Environmental Quality

Clean Air, Safe Water, Healthy Land for Everyone

Outline

- PFAS Approach
- PFAS Sampling Project
- PFAS Resources
- PFAS Solutions
- Lessons Learned



ADEQ PFAS Approach

Safe Drinking Water

- Gather and analyze data
- Assist drinking water systems

Community Engagement

- Communicate with impacted communities
- Develop web resources

Strategic Implementation

- Promptly incorporate federal regulations
- Engage stakeholders

PFAS Approach: ADEQ Contacts

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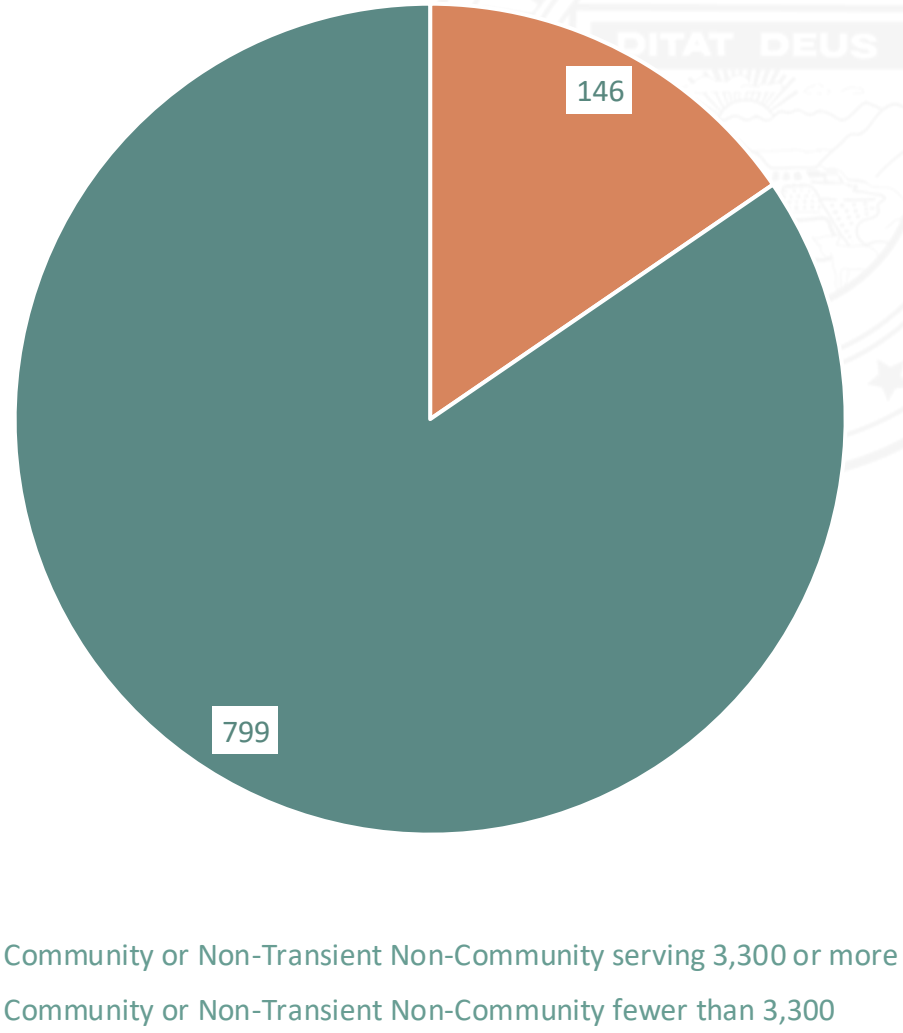
Arizona PWSs Regulated by PFAS Rule

1508 total Public Water Systems in Arizona

- Primarily groundwater
- No state standard for PFAS
- 945 of these are regulated by PFAS rule (Community and Non-Transient Non-Community)

Of these 945:

- 146 serve 3,300 or more
- 799 serve fewer than 3,300
- **85% of Arizona's PWSs are not included in UCMR5**
  - 400,000 people



PFAS Sampling Project

December 16, 2022
PRESS RELEASE | ADEQ Initiates Proactive $3M Public Water System Sampling Plan to Protect Arizona's Drinking Water from Per- and Polyfluoroalkyl Substances (PFAS) Contamination

https://bit.ly/AZSampling-PFAS

Main Objectives:

- Conduct sampling of 765 PWSs to identify and quantify the extent of PFAS impacts
- Provides free baseline screening for small water systems

Phase 1 Scope:

- Supply analytical results to PWS owners
- Develop a comprehensive database of PFAS contamination
- Supply data to ADEQ PFAS Interactive Map

Funding:

- Emerging Contaminants - BIL Funding Set-Asides
- Budgeted $3 million

PFAS Sampling Project

- Certified labs under state contract
- Samplers were contractors and ADEQ staff
- Two rounds of sampling
- Samples taken at EPDSs

<u>Phase 1: Initial Sampling</u>

- Completed
- 91% participation
- Mirror UCMR5
- Identify PFAS to allocate funding
- Methods 533 and 537.1
- Samples taken approx. 90 days apart

<u>Phase 2: Initial Compliance Monitoring</u>

- 50% Complete
- Method 537.1 only
- Had to adjust sampling timing
  - Rule says 5 to 7 months apart
- Awaiting guidance on final process to use the data for compliance

PFAS Sampling Project

Initial contact with PWS owners

- Discussed background of PFAS and participation benefits
- Some PWSs reticent to sample outside of required sampling

Results

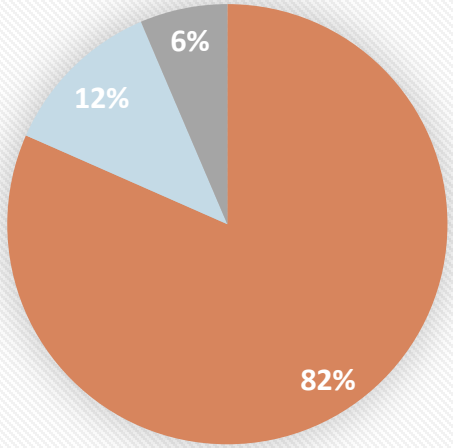
- Shared with PWS
- Posted on ADEQ's PFAS Interactive Map

PFAS detections

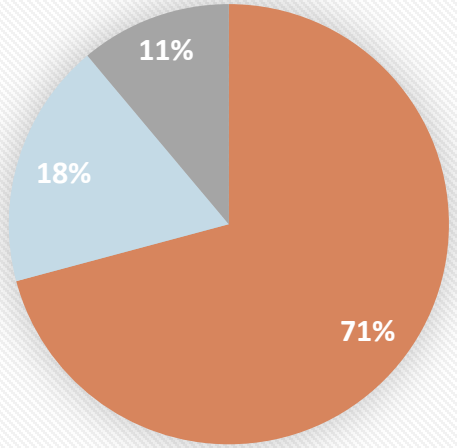
- Provided PWS with PFAS Toolkit
- Asked PWS to inform customers

PFAS Results

ADEQ Sampling Results (as of 7/23/24)



UCMR5 Sampling Results (as of 7/23/24)



PFAS Resources: www.azdeq.gov/pfas-resources

ADEQ Arizona Department of Environmental Quality

— PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

PFAS Resources

Revised on: April 15, 2024 - 9:43 a.m.

ADEQ is monitoring scientific, regulatory and legal developments related to PFAS (per- and polyfluoroalkyl substances) and participating in related discussions with federal, state and local agency partners. PFAS exposure is linked to potential adverse human health outcomes and is the subject of increasing regulation and litigation. To keep the public and other stakeholders informed, ADEQ will update this PFAS Resources webpage with new information as it becomes available.

What are PFAS?

PFAS are a group of man-made chemicals with fire-retardant properties manufactured and used by various industries since the 1940s. PFAS have been used commercially in the United States to make products like stain and water-resistant carpets and textiles, food packaging, firefighting foam, and other industrial processes. | Learn More ATSDR PFAS >

What PFAS regulations are there?

PFAS regulations are increasing at federal and state levels in the United States. New regulations are focusing on decreasing their use in manufacturing, lowering the limits for acceptable levels of PFAS in groundwater and soil, and requiring remediation projects to address PFAS contamination.

On April 10, 2024, the United States Environmental Protection Agency (EPA) finalized a National Primary Drinking Water Regulation (NPDWR) establishing legally enforceable levels, called Maximum Contaminant Levels (MCLs), for six PFAS in drinking water: PFOA, PFOS, PFHxS, PFNA, and HFPO-DA as contaminants with individual MCLs, and PFAS mixtures containing at least two or more of PFHxS, PFNA, HFPO-DA, and PFBS using a Hazard Index MCL to account for the combined and co-occurring levels of these PFAS in drinking water. EPA NPDWR | View >

Additional information on EPAs website:

— INTRODUCTION TO PFAS IN ARIZONA

Watch a Video

CONTACT

SEE MORE

- AFFF Resources >
- AFFF Pilot Program Map >
- Industry & PWS Screening >
- PFAS 101 >
- PFAS Map >
- PFAS Videos for Water Systems >
- PFAS & You >
- Protecting Tucson's Water >
- Luke AFB Area PWS Data >

ADDITIONAL RESOURCES

PFAS Resources: www.azdeq.gov/pfas-resources

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Additional information on EPAs website:

- PFAS | View >
- EPA Actions | View >

What is Arizona doing?

ADEQ has taken many proactive steps to understand the scope of PFAS impacts and ensure that Arizona is prepared to meet the new federal standards. Some of these steps include:

- Addressing PFAS in Drinking Water | Learn More >
- Public Water System PFAS Data (Luke Air Force Base Area) | Learn More >
- Protecting Tucson's Drinking Water Supply | Learn More >
- AFFF Stakeholder Advice, Education & Outreach | Learn More >

CONTACT

SEE MORE

ADDITIONAL RESOURCES

Agency for Toxic Substances and Disease Registry

- PFAS & Your Health >
- Toxicological Profile for Perfluoroalkyls >

Advisory Panel on Emerging Contaminants

- About APEC >
- Final Report 2016 >

ADEQ

- AZ Public Water System PFAS Toolkit >
- Decision Trees for PFAS Mitigation >
- Guidance for the Public >
- Guidance for Utilities >
- How to Sample Your Tap for PFAS >
- Letter to Health and Vector Control >
- Screening for PFOA/PFOS Report 2018 >

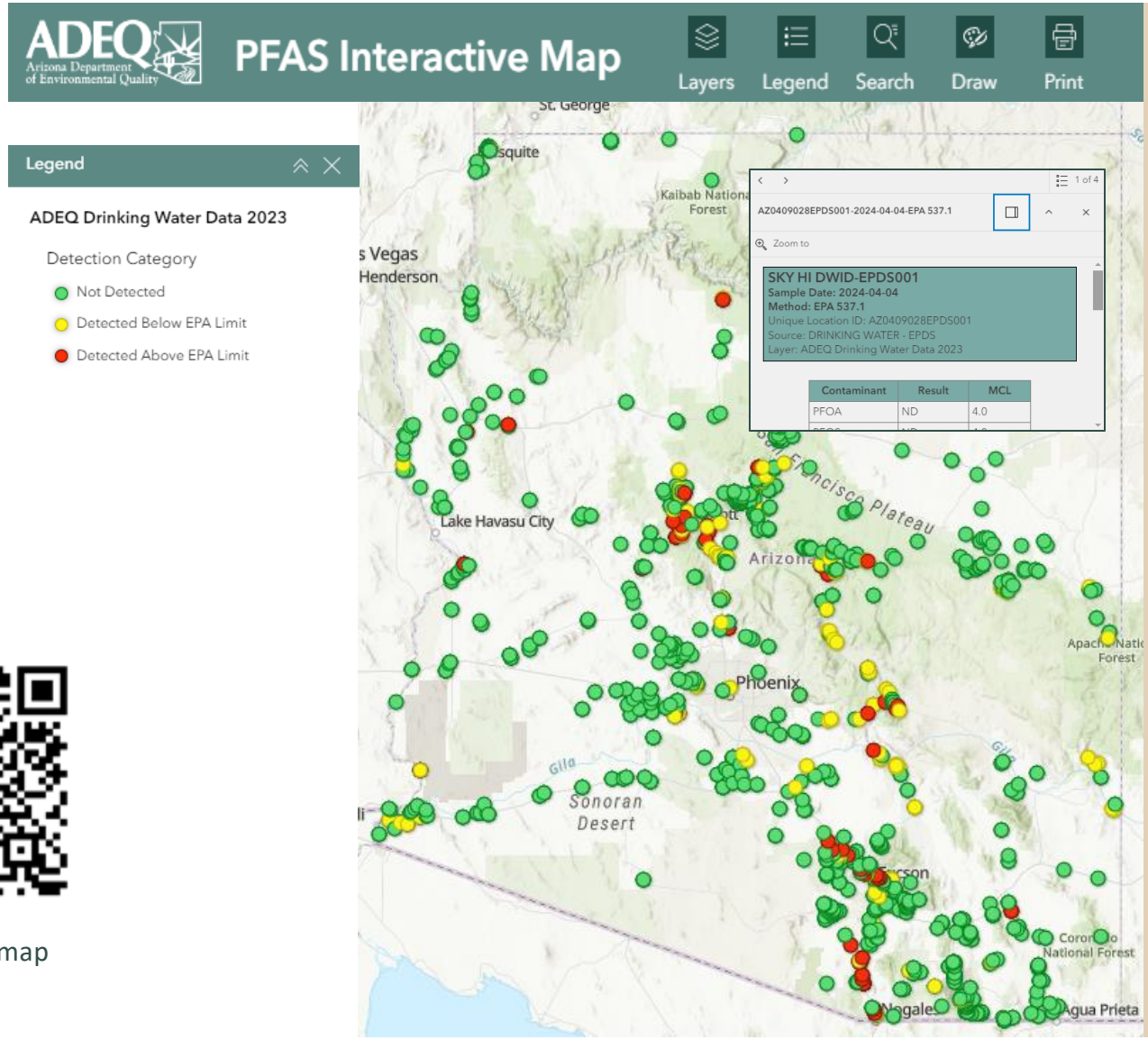
Arizona Department of Health Services

- PFAS Information Webpage >
- PFAS Infographic >
- Well Water Quality >

EPA

- PFAS >

PFAS Resources: PFAS Testing Results



Instructions >

What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that have been manufactured and used by a variety of industries since the 1940s. PFAS have been used commercially in the United States to make products like stain and water resistant carpet and textiles, food packaging, firefighting foam, as well as in other industrial processes. | EPA PFAS Webpage > | ATSDR PFAS Webpage >

On April 10, 2024, the U.S. Environmental Protection Agency (EPA) announced its final National Primary Drinking Water Regulation (NPDWR) for PFAS to establish legally enforceable levels, called Maximum Contaminant Levels (MCLs). An MCL is the highest level of a contaminant that is legally allowed to be present in drinking water. The EPA has established MCLs for five individual PFAS: PFOA, PFOS, PFHxS, PFNA, and HFPO-DA (sometimes called GenX). In addition, four PFAS (PFHxS, PFNA, PFBS, and HFPO-DA) will be regulated as a mixture using a calculation called a Hazard Index. | EPA Final MCLs >

Public water systems have three years to complete initial monitoring (by 2027) and will have five years (by 2029) to implement solutions that reduce these PFAS if monitoring shows that drinking water levels exceed the MCLs. ADEQ is already working with systems to address PFAS impacts. | Learn More >

What is included on the map?

PFAS testing results can be viewed by clicking any symbol on the map. The map displays the results of testing conducted by ADEQ since 2023 at small public water systems across Arizona. Larger systems are being sampled under EPA's Fifth Unregulated Contaminant Monitoring Rule (UCMR5). Results of UCMR5 testing are available from EPA. | UCMR5 Results >

Additional data layers are available that display historical public water system testing from 2013 to 2022. These data include targeted testing of public water systems conducted by ADEQ and data from the EPA's Third UCMR sampling event. The additional data layers can be viewed by selecting the "Layers" icon at the top of the map and clicking the visibility icon to the right of the layer name (see Instructions for more details).

Public water systems may already be taking action to lower PFAS concentrations so these results may not represent the quality of drinking water customers are receiving. Please contact your local water provider if you have questions about your water quality | Learn More >

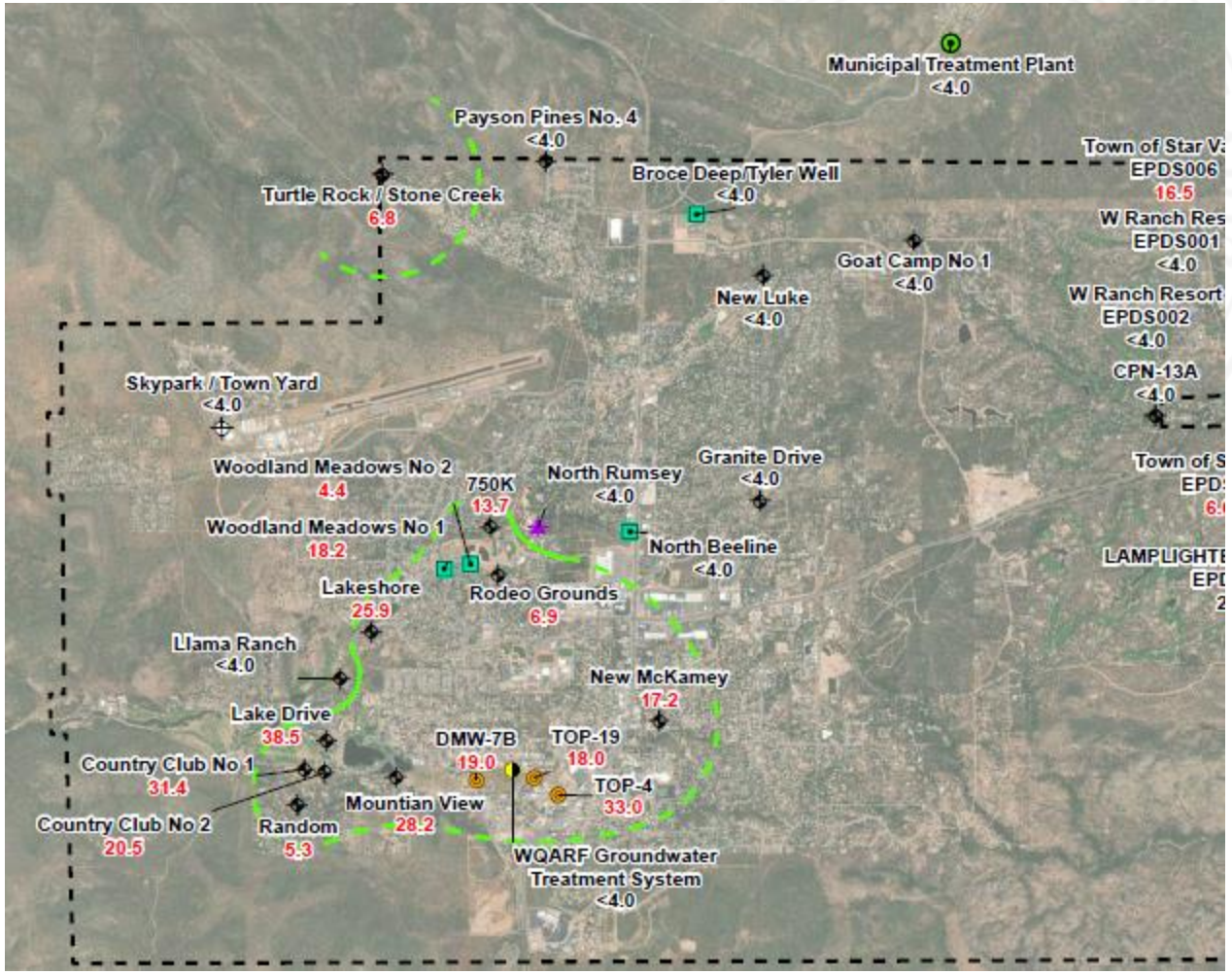
Are these data available for download?

Validated data may be requested from the ADEQ Records Center. | Records Center >

bit.ly/myPFASmap

Hydrogeologic Studies

- Conduct hydrogeologic studies to evaluate potential treatment alternatives
  - Evaluate all existing hydrogeologic data and PFAS sampling data
  - Fill data gaps by conducting fieldwork
- Ultimate goal: help water providers assess alternatives
- Targets three areas across state



PFAS Resources: ADEQ PFAS Webinars

PFAS 101 Workshop

- Audience: water system owners and operators
- Recording available on ADEQ's YouTube channel

PFAS Drinking Water Treatment Webinar

- Audience: engineering firms (technical content)
- Recording available on ADEQ's YouTube channel

rb.gy/vfpzvp

PFAS Resources: In-Person Trainings

Arizona PFAS Forum: Industry Perspectives on Solutions

- Partnered with Arizona Water Association
- February 1, 2024
- Free, with PDHs
- 169 attendees
- Presentations on:
  - Funding
  - Permitting review process for PFAS
  - Technical aspects
- Keynote from ASU professors
- Panel discussion with vendors and manufacturers
- Vendor Exposition

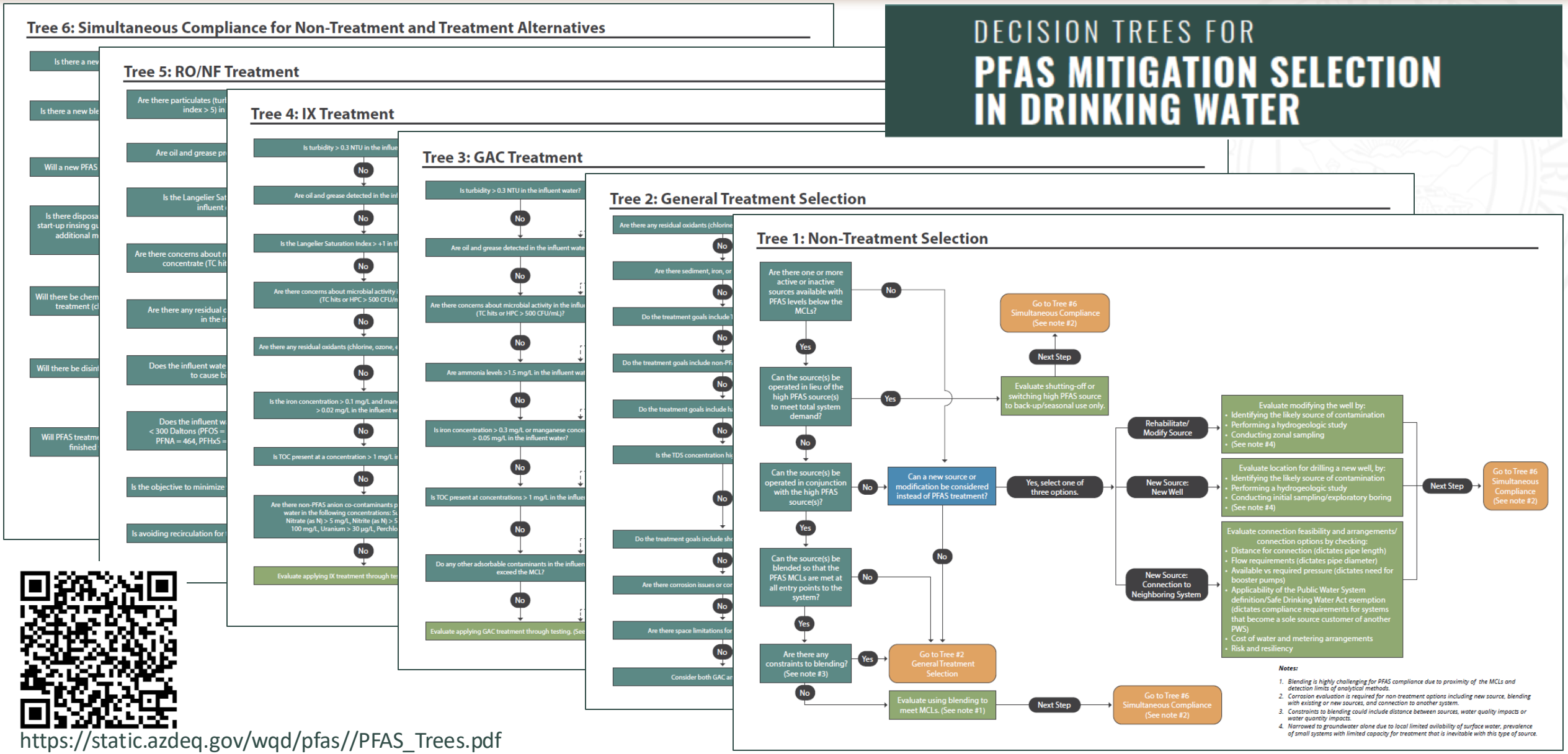
PFAS Training for Arizona Drinking Water Operators

- Hired professional trainer with PFAS experience
- August 2024
- Free, with PDHs
- Two locations (north/south)
- In-person, two-day training
- Limited to 30 people each

PFAS Resources: PFAS Mitigation Decision Trees

ADEQ Arizona Department of Environmental Quality

DECISION TREES FOR
PFAS MITIGATION SELECTION IN DRINKING WATER



https://static.azdeq.gov/wqd/pfas//PFAS_Trees.pdf

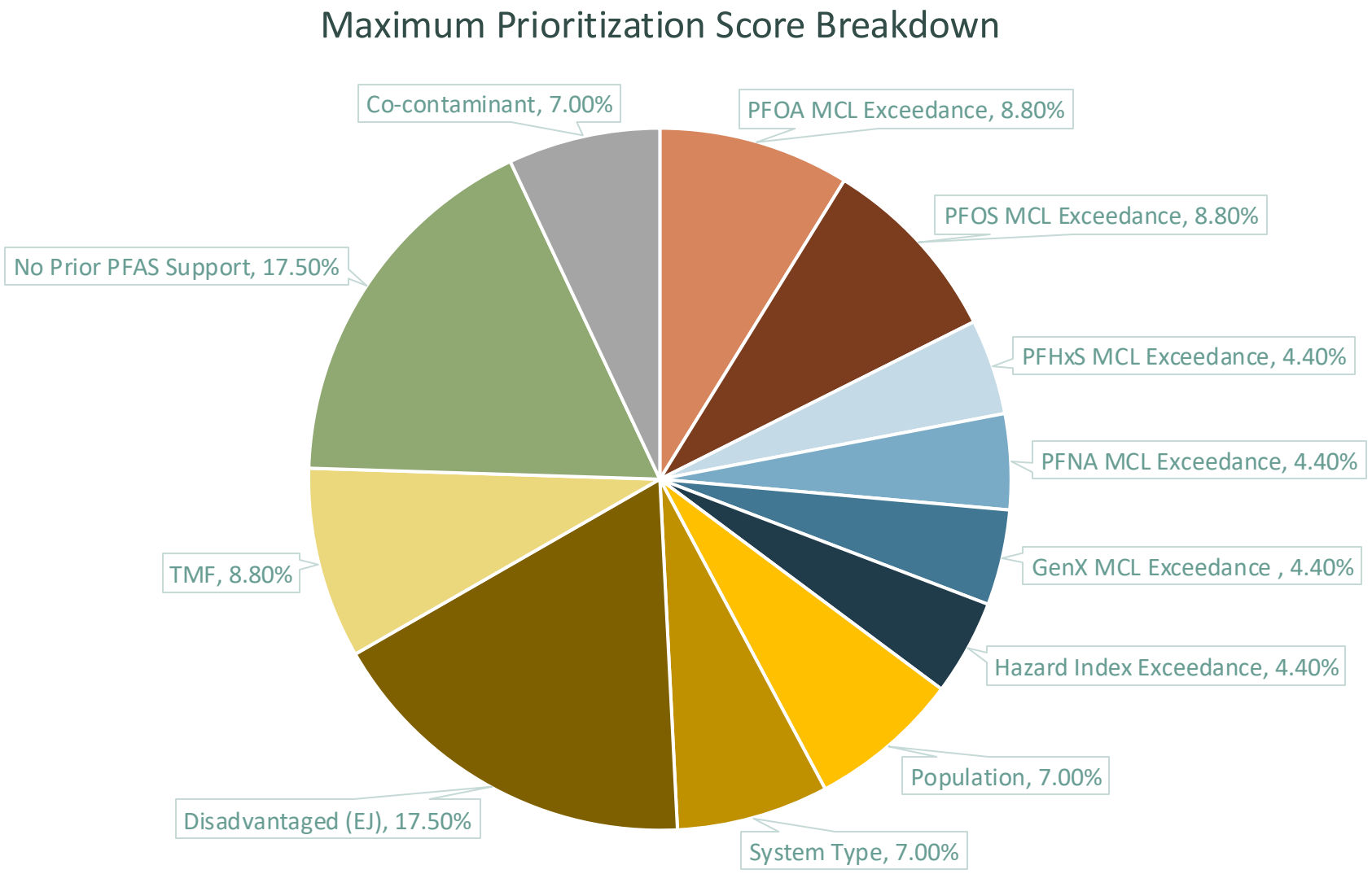
PFAS Solutions: Project Assistance

PFAS Funding	
Amount	$47,000,000
Restrictions	• Emerging contaminants • Public water systems that serve <10,000 people or serve a disadvantaged community
Uses	• Projects for public water systems ($45M) • Continued Sampling ($1M) • Hydrogeologic Studies ($500K) • Outreach, training, reference materials ($500K)
Timeframe	October 1, 2023 – September 30, 2028

PFAS Solutions: Mitigation Strategies

- ADEQ will select public water systems most in need
  - Highest levels of PFAS
  - Small or disadvantaged
- Non-competitive
- Appropriate solutions
- System must agree to participate
- ADEQ contracts directly with design engineers and construction contractors
- ADEQ handles all payments

PFAS Solutions: Prioritization of PWSs



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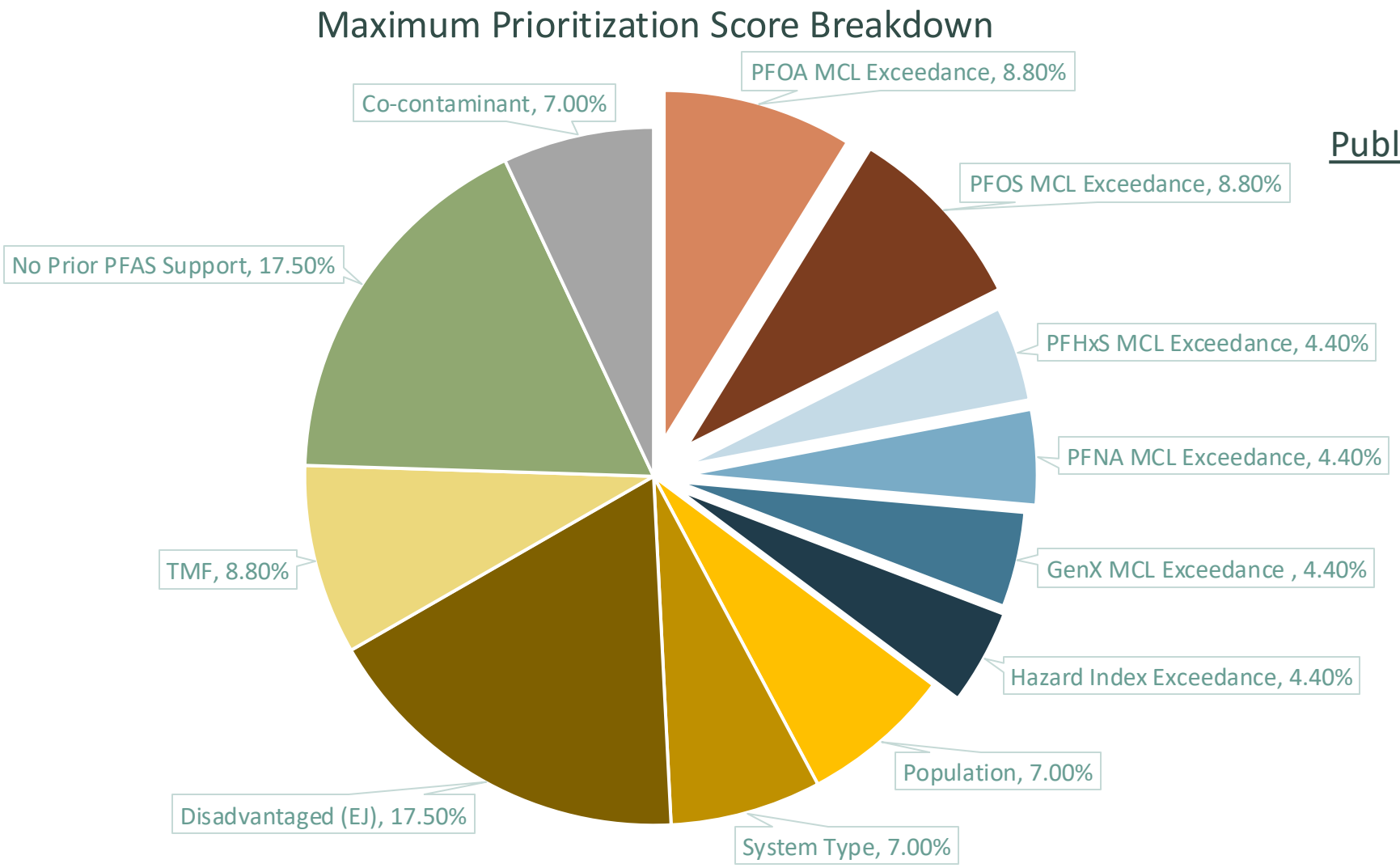
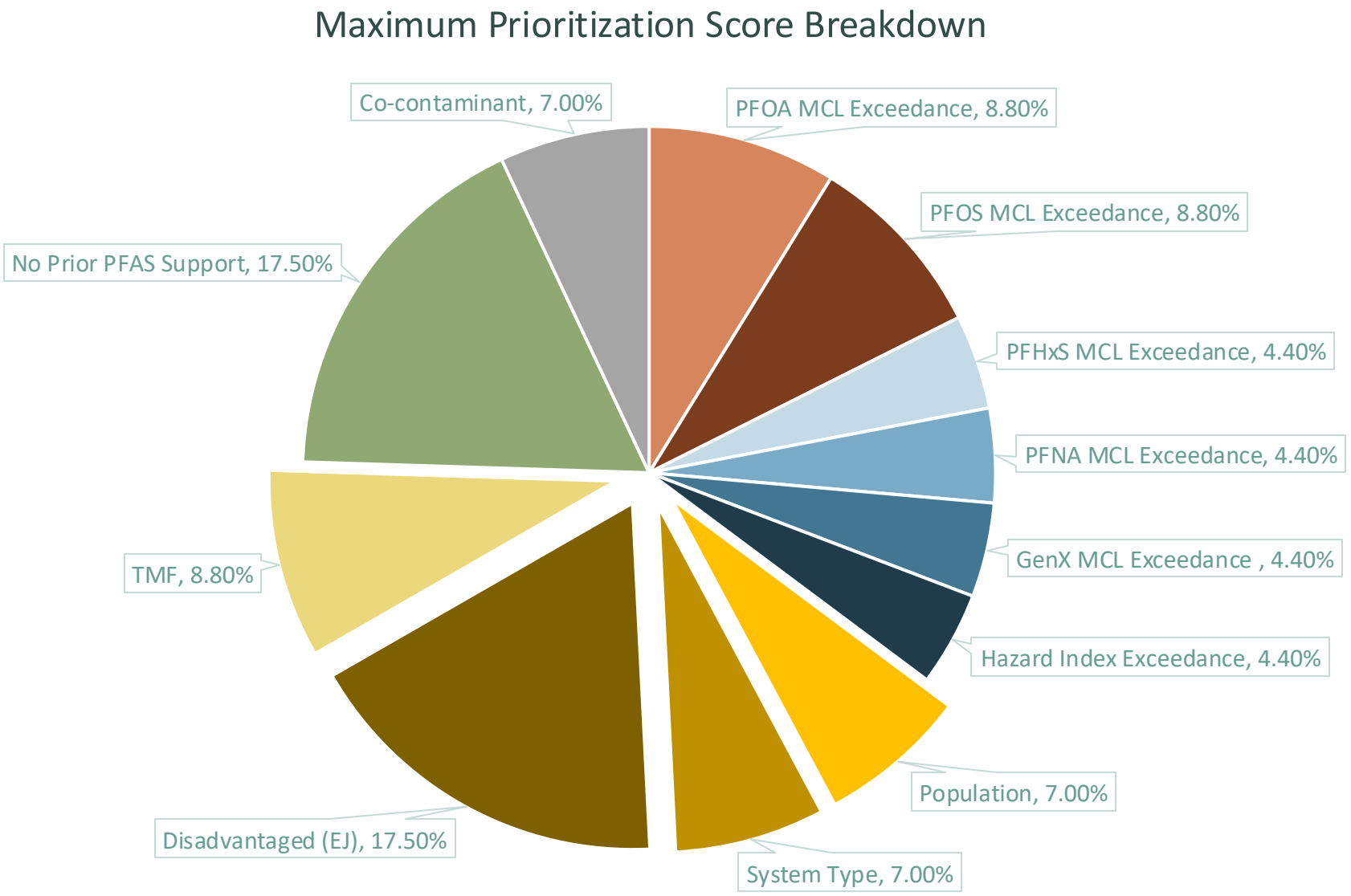


Public health impacts

- 4x above MCL/Hazard Index (HI)
- above MCL/HI
- at least 50% of MCL/HI

Data sources: ADEQ PFAS sampling project and UCMR5

PFAS Solutions: Prioritization of PWSs



PWS Characteristics

Disadvantaged community

- 90% or less than the state median household income
- Federally designated colonia

Technical, managerial, financial capacity

- Ability to manage, operate and maintain system

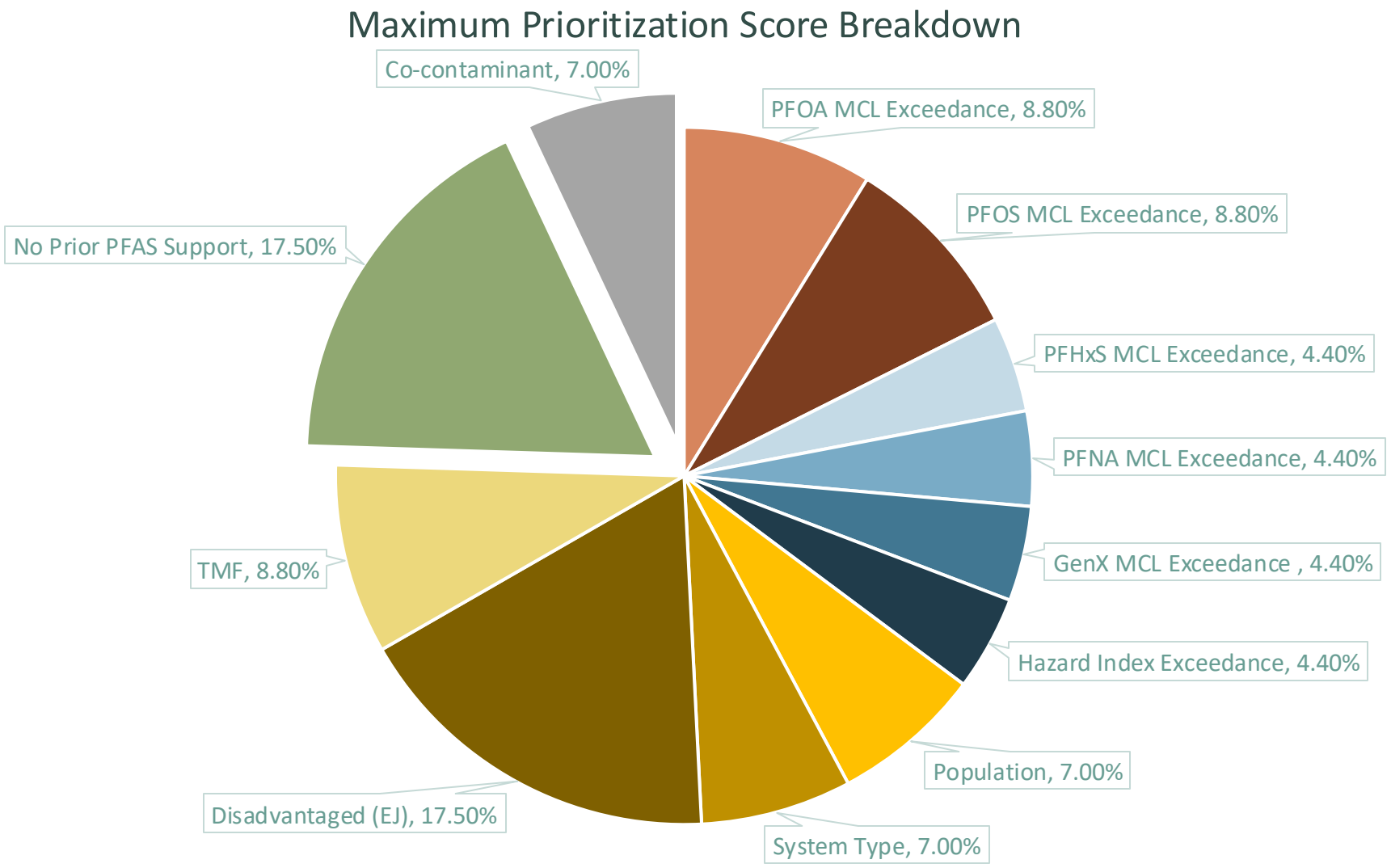
Population served

- Smaller systems receive more points

PWS type

- Community or Non-Transient Non-Community

PFAS Solutions: Prioritization of PWSs



Presence of other contaminants

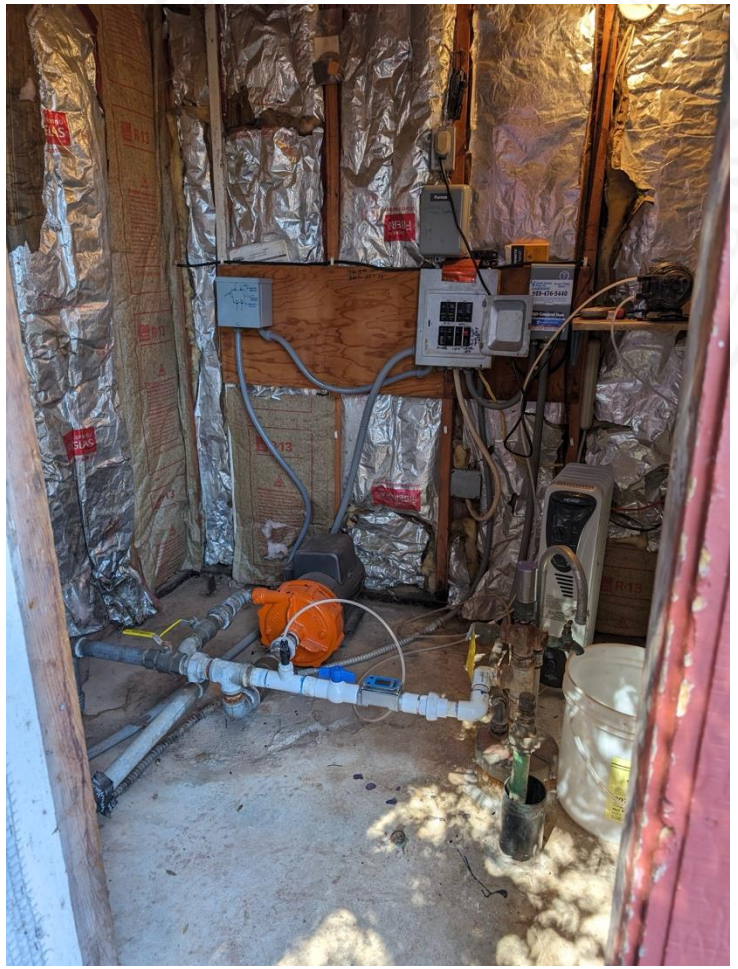
- nitrates
- arsenic
- fluoride
- radionuclides
- lead/copper
- disinfection byproducts

No prior financial support for PFAS mitigation

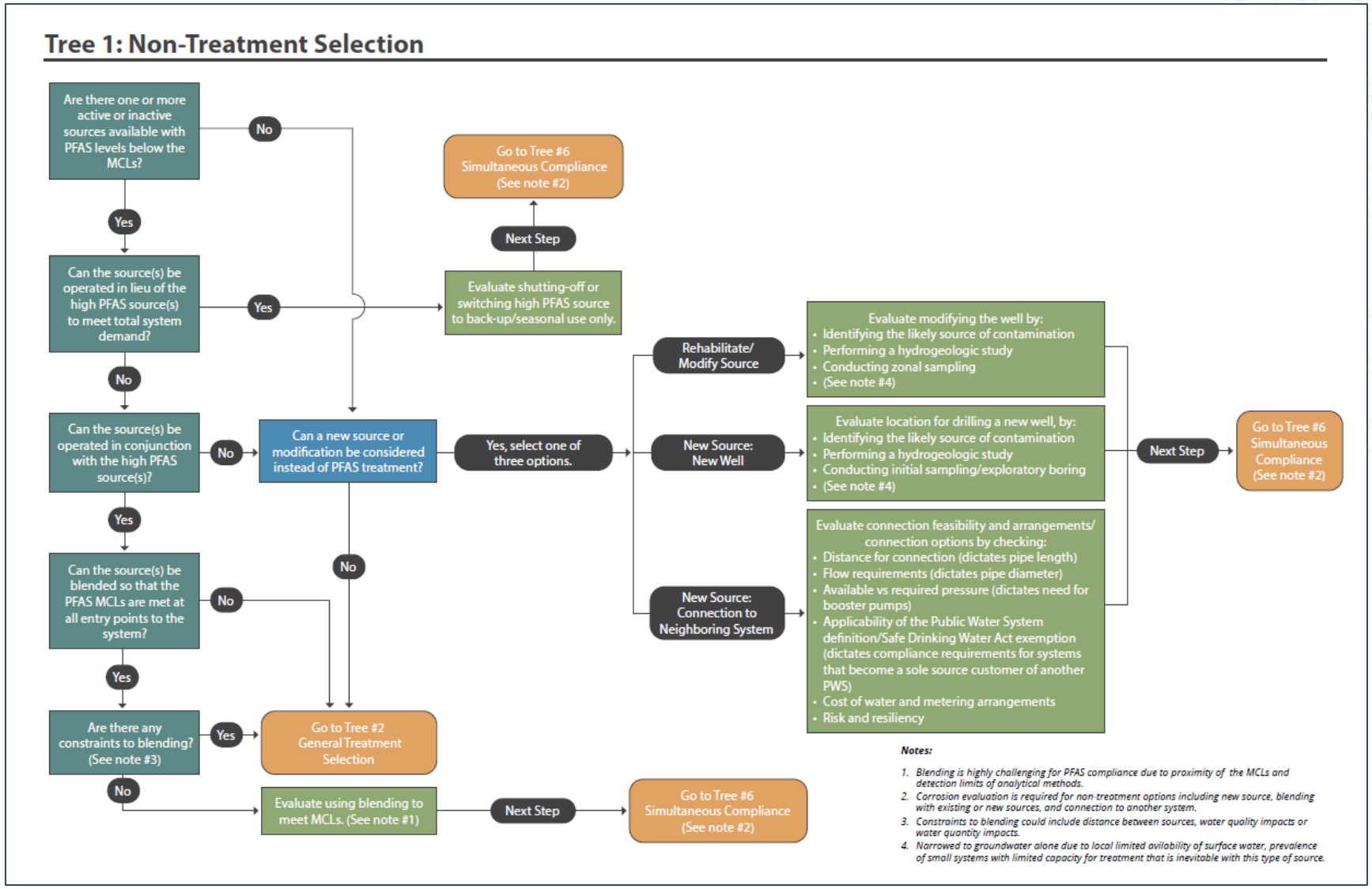
PFAS Solutions: PFAS Mitigation Strategies

Appropriate solutions for small or disadvantaged systems:

- Treatment not always best approach
- Cost must be commensurate with benefit
- Non-treatment alternates such as consolidation, connection, deeper wells may be better approach
  - Fast, cost-effective, sustainable
  - Long-term O&M of treatment system
    - Cost of media
    - Change out of media
    - Disposal of spent media
  - Technical, managerial, financial capability
    - Ease of operation
    - Level of operator certification



PFAS Solutions: Tree 1: Non-Treatment Selection



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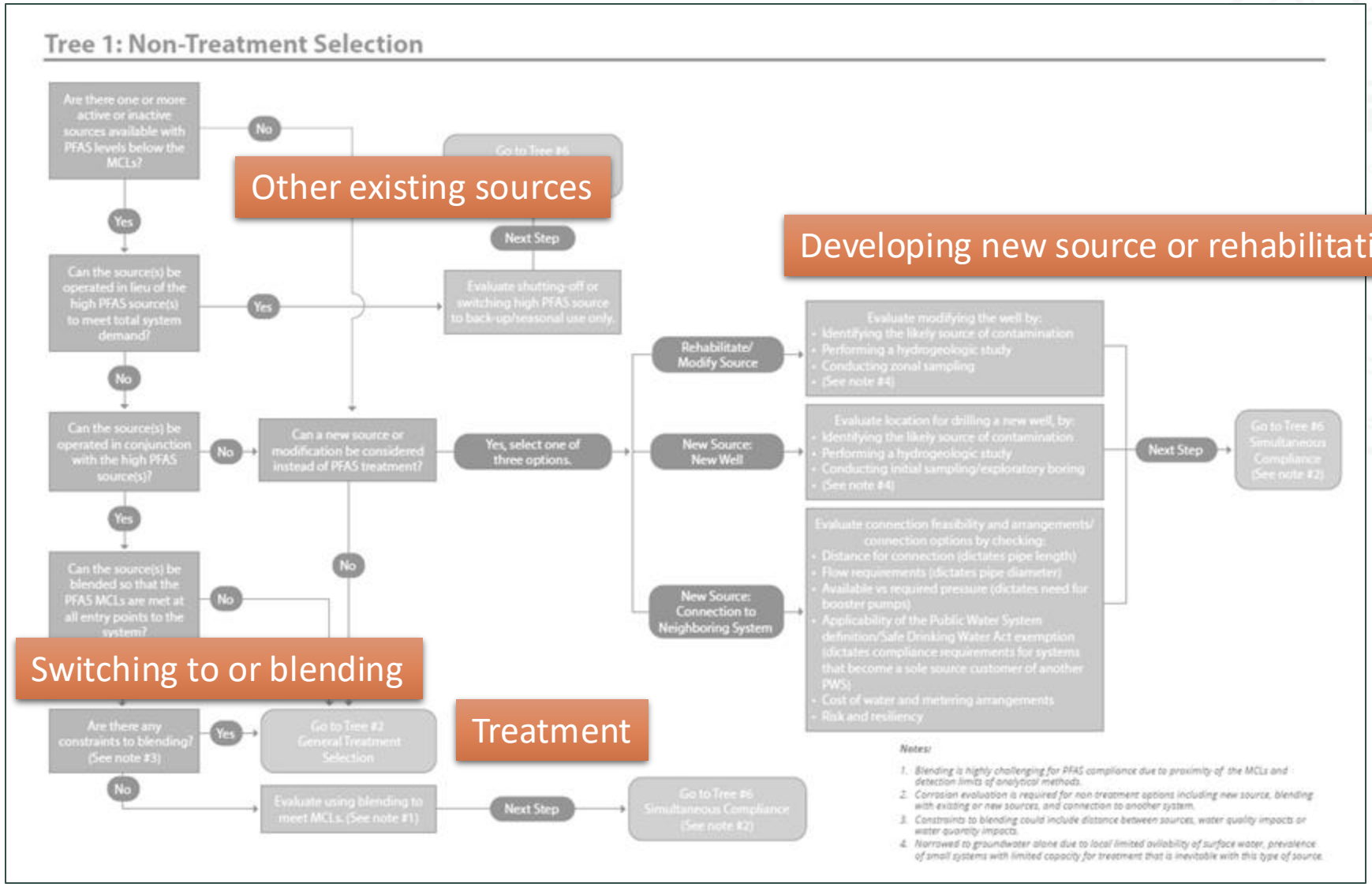
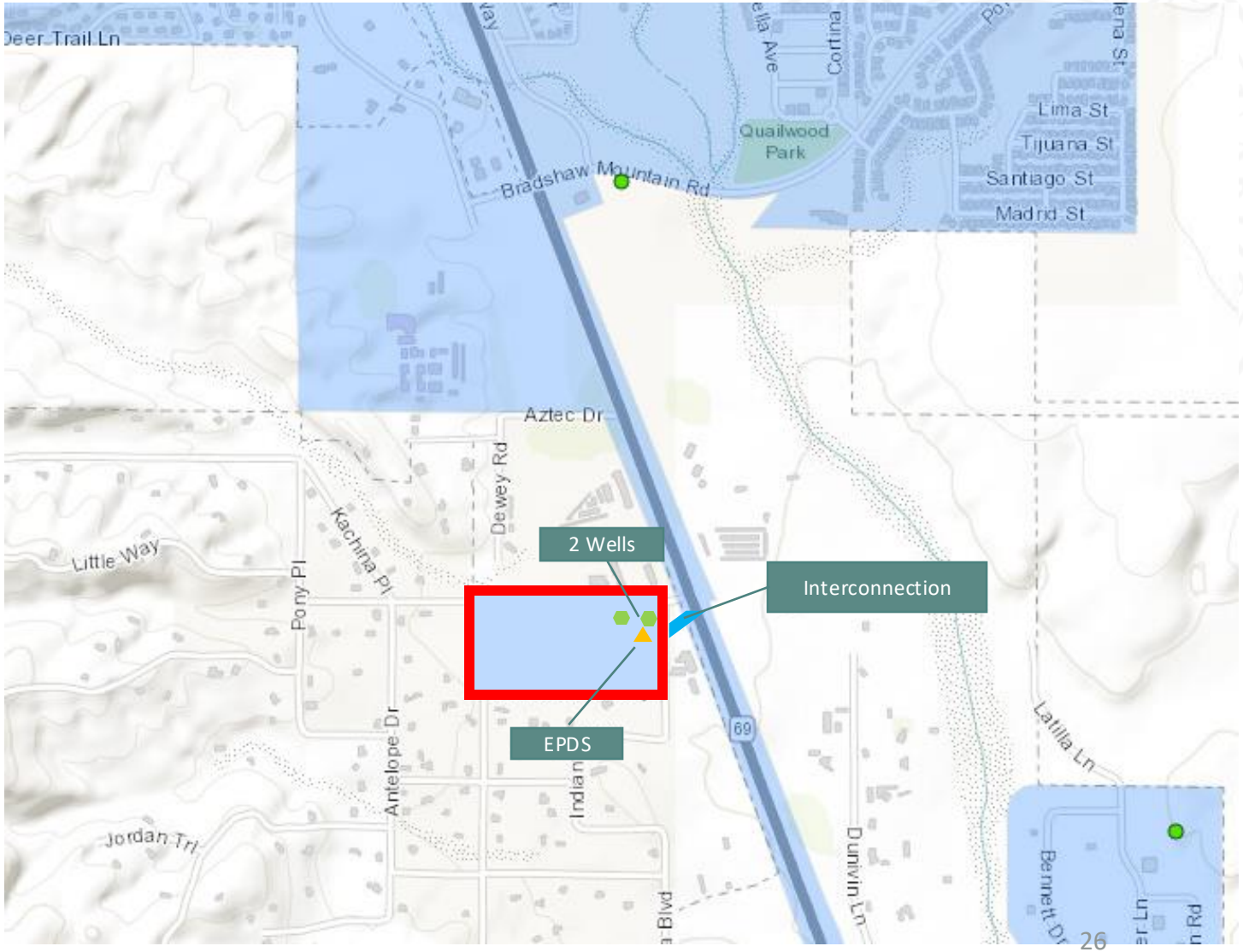


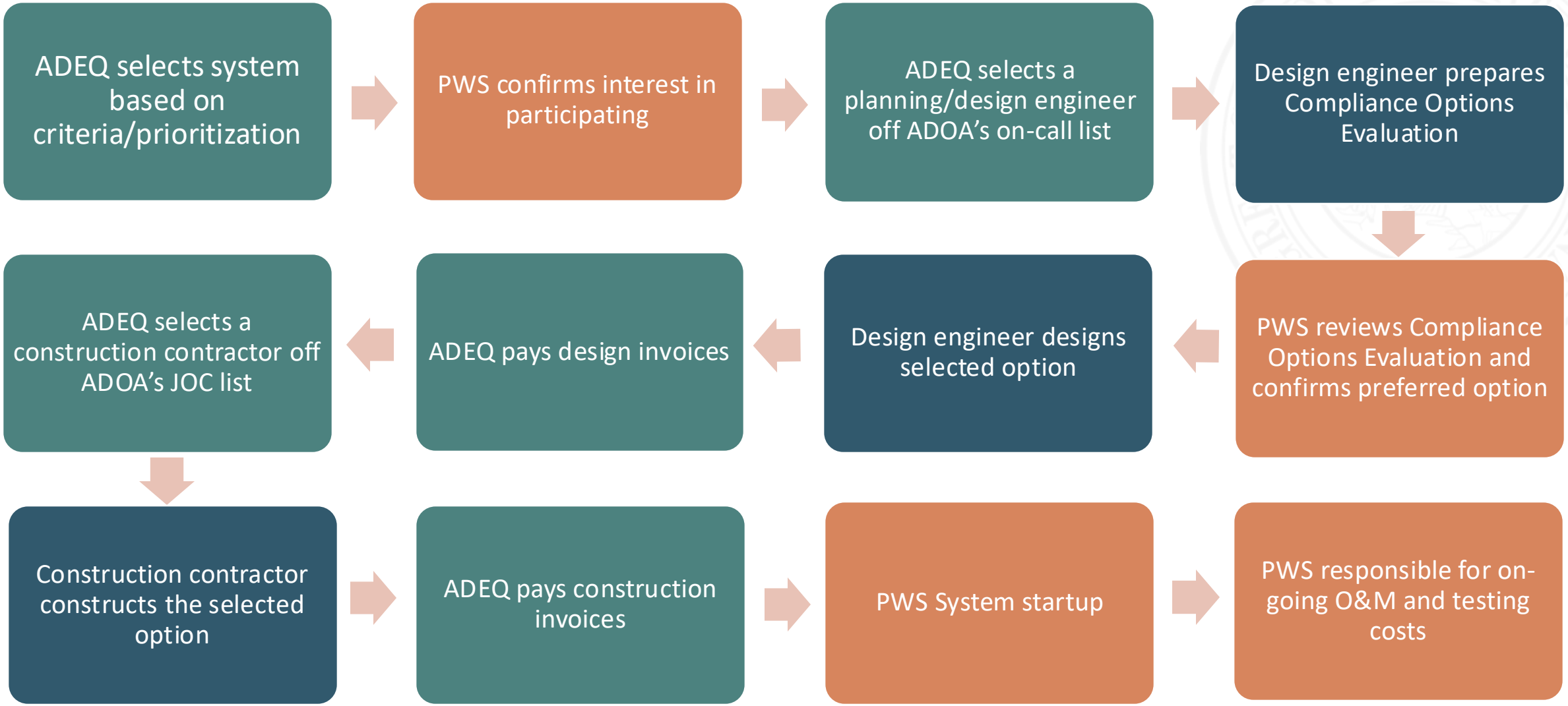
PFAS Solutions: Example Process

Small system with PFAS above MCLs at EPDS

1. Assess EPDS
    1. Sample all wells, including inactive
    2. Include interference sampling
2. Evaluate data and wells
    1. Consider well investigation
    2. Consider turning off worst well and blending
    3. Consider interconnection to neighboring system
3. Request consulting engineer to evaluate all options and prepare Compliance Options Report



PFAS Solutions: Process



PFAS Solutions: ADOA's On-Call Lists

On-call lists created by Arizona Department of Administration, State Procurement Office (ADOA, SPO)

- Cooperative statewide contracts
  - Can be used by any state agency
  - Engineering, Civil Engineering, Hydrology lists
- 10 firms per list
- 5-year term
- Sent out PFAS questionnaire to every firm on lists
- Interviewed those that replied with PFAS experience

Encountered challenges

- Bandwidth (contracted with several other state agencies)
- PFAS expertise was not local

PFAS Solutions: Qualified Vendors List

- Creating a Qualified Vendors List
- Developing Scope of Work
- Multiple Contract Award
- As-needed, if needed

- Menu of services
  - Groundwater/Well Investigation
  - Compliance Option Report
  - Design
  - Sampling (including private wells)
  - Training
  - Rate Study
  - MHI Survey

PFAS Solutions: Projects Underway

Rillito Water Users Association	Increase managerial and financial capacity through RCAC
Ranch Water Service	Existing RO system exceeding PFAS; ADEQ engineer assisted with optimization
City of Globe	1 well impacted by PFAS and inactivated
August Hills Mobile Home Park	Connect to City of Globe
HAV Properties	Connect to City of Globe
Town of Star Valley	3 wells with PFAS inactivated. 2 other wells may require large booster station
Lil W Ranch	Nitrate violation to be mitigated by connecting to the Town of Star Valley
Houston Creek Park	Connect to Town of Star Valley
Pine View RV Park	Connect to Town of Star Valley
Town of Payson	Multiple wells with PFAS, need to prioritize/phase
Twin Lakes Mobile Home Park	Connect to Town of Payson
Town of Chino Valley	Well investigation; pilot and design treatment for well impacted by PFAS
Pinehurst Water Company	Well investigation; compliance options report
Ponderosa Park DWID	Multiple wells with PFAS; compliance options report

Lessons Learned

- Suddenly, everyone is an expert
  - Engineering firms – safeguard against bait and switch
  - BAT vs novel technologies
- Procurement
  - On call state list insufficient, need Qualified Vendors List
- PWS may not want investigation – why look for issues
  - WQP if find e. coli or perchlorate, need to do something
  - Co-contaminants – septic/nitrates
- Can't predict future
  - Aquifer hydraulics
  - Planning for space/footprint

"There is nothing like looking, if you want to find something. You certainly usually find something, if you look, but it is not always quite the something you were after." – **J.R.R. Tolkien, The Hobbit**

Thank you! Questions?

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