SCOTTSDALE WATER

9379 E San Salvador Drive
Scottsdale, AZ 85258

Phone: 480-312-5685
ScottsdaleAZ.gov/Water

December 1, 2023

Trevor Baggiore
Director, Water Quality Division
Arizona Department of Environmental Quality
110 West Washington Street
Phoenix, Arizona 85007
Sent via email to reuserulemaking@azdeq.gov, baggiore.trevor@azdeq.gov

Re: Arizona Department of Environmental Quality Advanced Water Purification Roadmap

Dear Mr. Baggiore,

We appreciate the opportunity to comment on the Arizona Department of Environmental Quality (ADEQ) Advanced Water Purification (AWP) Roadmap. Our objective with ADEQ is the fundamental goal of developing economical and health-risk based rules that allow for the permitting, operation, and direct use of Advanced Purified Water (APW). In pursuit of this objective, Scottsdale, as the only existing Advanced Water Purification facility (AWPF) permit holder, is uniquely positioned to understand the needs and ramifications of this process. Scottsdale recommends that ADEQ consider a few adjustments during the development of a proposed rule for AWP.

The major areas of concern involve the following themes:

1. Flexibility in treatment facility design to ensure plants can be built or improved using available resources and treatment trains to count as protective microbial and chemical measures.
2. Flexibility in the operator certification process for Advance Water Treatment Operators to allow Wastewater Treatment Operators to qualify for the new certification.
3. Flexibility in the Enhanced Source Control program to allow utilities to build from existing industrial pretreatment programs based on the experience of these program.
4. Structure ultimate compliance points to be consistent with process control in the AWTF, and the Safe Drinking Water Act in the Public Water System and rely solely on the Safe Drinking Water Act requirements for customer notifications.

General Comments:

1. Based on statements in the Roadmap, it appears that the AWP permit will be issued out of the ADEQ Reclaimed Water Unit and thus is a reclaimed water permit. This creates

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confusion when the Roadmap makes statements, requirements, and allowances that the treated water is drinking water. Examples are the requirement for drinking water operators to operate the Advanced Water Treatment Facility (AWTF), and the monitoring of Tier 1 contaminants and their associated Maximum Contaminant Levels (MCL) at locations before and after the AWTF. If this water is to be recognized as drinking water, why is this not being managed by drinking water professionals out of the ADEQ drinking water unit and be considered part of our Public Water System (PWS)?

The best direction for this program, and to meet all requirements and expectations of multiple permits, i.e., Aquifer Protection Permit (APP) and AZPDES for diversion, is to have the permit issued out of the reclaimed unit and remove the drinking water mandates until the water becomes part of the Public Water System.

2. The Roadmap moves between different inferred compliance points within the treatment system and does not follow accepted terms in drinking water regulations to allow parallels to be drawn. Specifically, the use of the term "finished water", though defined, creates confusion. The precise compliance points must be clearly identified and used consistently throughout the document. A suggested term substitute for "finished water" would be Advanced Treated Water with a new definition (see below). This location would be followed by the Entry Point to Distribution System (EPDS) which is already defined in drinking water regulations.

   Advanced Treated Water (ATW) – final point where water leaves AWP associated treatment. The data is solely used for process control and is never reported to the public. This location will be different for every utility, as each plant will be designed differently. In the project plan, a utility must designate this location where all microbial and chemical treatment has been completed to comply with the permit. This is the point at which a final determination must be made on whether to send the water to drinking water end use or divert the water for some other use. That would be the sole reason to designate this compliance point for monitoring.

   Entry Point to Distribution System (EPDS) – the drinking water compliance point and the only point where drinking water compliance is determined. This is the only location where public notice or public reporting of any kind would be necessary. All final treatment has been performed, including disinfection prior to being sent to consumers.

3. As required, each utility must determine and designate locations where water that does not meet permit parameters can be diverted and would not be sent for drinking water end use. Though situations of off spec water might occur, diversion of noncompliant ATW demonstrates that the process has effectively prevented its distribution to the public. Furthermore, no violation would have taken place and public disclosure of such a diversion event would not be necessary. As long as all drinking water compliance is met at the EPDS, a diversion should serve only to trigger an investigation prior to returning AWP to service to drinking water end use.

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Section Comments:

Executive Summary – Chemical Removal Standards - Tier 2
The statement in Tier 2 that certain chemicals "may pose a significant health concern" is potentially inflammatory, as it lacks concrete data to support such claims. Unless data can be shown to prove this is true, this statement could create concern with the public. The use of the word "may" does not minimize this is a statement that cannot be validated.

Section 3 Program Description:

i. What will the Arizona AWP Program look like: This section mentions that the drinking water Approval to Construct (ATC) and Approval of Construction (AOC) process will be used for design and review of projects. For utilities in Maricopa County, this process is currently delegated to the County. Maricopa County currently has a prohibition against direct potable reuse, that makes issuing an ATC and AOC a conflict of interest. How is ADEQ working with the County to ensure they lift their prohibition for direct potable reuse and allow projects to move forward?

ii. Applicability of APP and SDWA within AWP Program: It must be recognized that some AWTFs will be permitted concurrently by the APP program, the AWP program and be part of a Drinking Water Treatment Facility (DWTF) based on language from this section and Section 3.1.1. This presents conflicting requirements in Arizona Administrative Code (AAC) Title 18 Chapter 5. Therefore, flexibility must be allowed in the design and implementation of these facilities and the associated operator certifications. For example, as stated in the Roadmap, proposed AWP programs that utilize Water Reclamation Facility (WRF) infrastructure to receive credit for pathogens or nitrogen, will be reviewed to determine compliance from WRF through AWTF. Based on the Roadmap, WRF operators would be required to have drinking water and collections certifications in addition to wastewater certification. This certification requirement may not align with the scope of work for WRF operators and should be reconsidered. This topic is discussed in more detail below.

vii. Project Advisory Committee (PAC): The existence of a PAC is unnecessary as ADEQ should have the necessary staff with the required expertise to ensure compliance with permit requirements for treatment facilities. Based on the suggested expertise of a panel, their charge would presumably be to review the science. This has already been done during the Technical Advisory Group (TAG) and does not need to be repeated for each facility. Lastly, if a PAC is to exist, it is concerning that ADEQ would not think to add a utility representative having operational experience to this panel since design and operation of the facility is the emphasis of design review.

Section 3.1.1. Pathogen Removal Standards: Section states, ADEQ will allow traditional DWTFs to be used as part of the AWP treatment process for the purpose of calculating AWTF Log

Removal Values (LRV). DWTFs must comply with the same validation and Critical Control Points (CCP) requirements as AWTFs to receive LRV credits. This would mean that the DWTF is an extension of the AWTF thereby having a DWTF governed by a reclaimed water permit. This again goes against AAC Title 18 Chapter 5.

It should be recognized that AWP represents a new technology with limited pathogen and surrogate parameter data available to it. The application of QMRA to estimate human health risk necessitates significant assumptions to be made about the validity and reproducibility of the methodology being employed and the viability of the pathogens being measured. Based on the shared documents reviewed by TAG members, there were no references to drinking water related outbreaks to substantiate the risk associated with the pathogens referenced in this section. Moreover, relying on the detection of norovirus RNA for AWP regulation is problematic at several levels; PCR applications are known to yield highly variable results between labs, even when standardized controls are used; the detection of DNA or RNA in a sample does not inform the infectious state of a virus, especially one that has seen the caustic environment that is the sewer system, and the various disinfection applications utilized by a WRF/AWTF, even if the sample is treated with nucleases; and finally, licensed laboratories capable of carrying out such testing are few and costly, and shipping samples to them present significant challenges. For these reasons, Scottsdale Water has recommended tracking live coliphage through the WRF/AWTF as a suitable surrogate for human viruses. Research by our utility has shown that the genetic material of nuclease-treated Adenovirus, Enterovirus, and Norovirus is not detected past treatment barriers where coliphage ceases to be detected. Importantly, using endogenous coliphage in place of norovirus for QMRA assessments, would not only be based on scientific observation (including peer-reviewed literature), but it would also support ADEQ's Guiding Principles outlined in section 2.2., setting it apart from the California pack, as an innovative and pragmatic regulatory agency.

Section 3.1.2. Chemical Removal Standards:

i. Tier 1 SDWA Regulated Contaminants: Not all WRF are specifically designed to meet drinking water standards and therefore should not be held to drinking water maximum contaminant levels (MCLs). Monitoring at this location prior to the AWTF is burdensome and offers no compliance value. Each utility must decide if this monitoring point will assist in meeting compliance and could add monitoring for process control at their own choosing. In addition, monitoring at the ATW compliance point can be used for process control only, as the drinking water compliance point is at the EPDS. The only exception would be if these two points were in the same place.

ii. Tier 2 Unregulated Chemicals. In multiple locations statements are made about "health risks" for these chemicals. Unless these statements can be backed up with information from a regulatory agency, they are inflammatory and create undo concerns for public. This statement should only be used for chemicals that have a defined health level recognized in the industry or by a regulatory authority.

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Scottsdale does not agree with the required monitoring for an unlimited or unspecified list of Tier 2 chemicals. These chemicals are unregulated and therefore are not required under any federal program for drinking water, or direct potable reuse. The list is endless of what might be considered if not defined and monitoring for such chemicals may not be possible. Developing a chemical inventory and determining Risk Specific Dose calculations is overburdensome to the utility.

As an alternative, the Roadmap references using Health Advisory Limits established by the USEPA in 2018. Requiring monitoring for contaminants on this list, that are not already monitored in Tier One, and are listed as a known human carcinogen or likely/probable human carcinogen, would give a defined list, and a list of the only chemicals that EPA has taken a position regarding health effects. This limits monitoring to 14 chemicals as opposed to an unlimited number.

If monitoring is required outside of these listed chemicals, and data is generated, utilities are put in a very difficult position to try to explain their meaning and determine if the water is "safe". By using this defined list, utilities can answer this question with confidence therefore building confidence in AWP water. In addition, if a public utility receives a public records request, and this data is reported, there is a context related to public health. Lastly, though the list is defined, it does not come without difficulty. Some of the chemicals listed do not currently have a recognized EPA test method.

Scottsdale Water cannot support required monitoring after the WRP, but will support process control monitoring at the ATW. Public notice related to these chemicals at the two locations referenced is unacceptable either at 30 days or in the annual Consumer Confidence Report (CCR). Public notice should be applied exclusively for detections or exceedances at the EPDS.

iii. Tier 3 Performance-based indicators Scottsdale Water supports the monitoring of Tier 3 chemicals as process indicators/surrogates to demonstrate that each process is operating as designed. A predetermined list of chemicals would allow utilities to use online monitoring at CCPs, and the measurement of Tier 3 chemicals periodically for confirmation. This would provide a robust system of process control and provide confidence to ADEQ that the treatment train is operating as designed. The use of indicators such as sucralose for monitoring the effectiveness of RO treatment is valuable, however it must be understood that due to its magnitude of concentration in the influent, it must be graded on a percent removal or log removal basis, rather than an expectation of "zero". Though TOC is an excellent indicator of an array of chemicals, online analyzer accuracy may still need to be determined. Utilization of TOC as an "important bulk surrogate" should be used by "comparing the median TOC of the purified water with that of the original drinking water TOC" (NWRI Independent Expert Advisory Panel, 2019).

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Section 3.2.1.1.3 Enhanced Source Control, Chemical and Discharger Inventory: Requiring every commercial establishment within the sewer shed to be inventoried, inspected and/or monitored is overly burdensome. Visiting every UPS Store, retail establishment, or clerical/administrative operation that discharge only domestic waste provides no protection to the sewer system, as the products are common for janitorial and maintenance activities. Inventories should be limited to industries and a focused list of commercial business types that are of greater risk to the WWTP, i.e., automotive repair shops, hospitals and medical centers, car washes, laboratories, and large manufacturers.

The utility should develop an Enhanced Source Control Program (ESCP) to monitor and control wastewater pollutants that are discharged from municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and commercial facilities that the utility determines have a reasonable potential to contribute a substantial pollutant loading. Since the utility is most knowledgeable of its treatment capabilities (i.e., maximum allowable headworks loading, MAHL) and what contaminants are a known challenge, it is most proficient of determining what chemicals pose a risk to the AWP project.

High-risk facilities can be identified using EPA's Enforcement & Compliance History Online (ECHO) tool, the Toxics Release Inventory (TRI), and Envirofacts to retrieve facility data by using any combination of facility name, location, industrial classification, and chemicals used. Business applications submitted to the city should require the inclusion of a list of chemicals and quantity used/stored on site. Periodic reports from the Tax & License department, combined with this information, should be used to develop a comprehensive inventory of potential polluters. From this inventory, the source control program should:

- Conduct a desktop review of such establishments should be completed prior to determining which facilities are subject to inspection under the ESCP.
- Prioritize the list based on greatest risk posed to the WRF/AWTF (i.e., typical discharge volume, chemicals used/stored on site, other regulatory oversight in place, etc.).
- Determine the appropriate frequency for inspection and/or monitoring, based on previously determined risk level.
- Establish Best Management Practices (BMPs) to reduce/eliminate pollutant discharges from certain business types, e.g., create operational guidelines specific to laboratories or automotive repair shops.
- Carryout inspections while continuously refining documentation of commercial dischargers.

Section 3.2.1.1.5. Early Warning System: While the idea of an early warning system seems like a protective measure, it is only an administrative and cost burden to the utility without truly proven success in the industry. These types of early warning systems are still in development for raw sewage and are not ready or proven for full scale use. As a result, considerable cost and

administrative time would be spent without certainty that any additional protection is created for the utility or the consumer. Instead, each system should determine how they protect against chemical peaks and include this in the application process.

Section 3.2.1.1.7 Response Plan for Enhanced Source Control. While identifying the source of a discharge in a collection system seems feasible, the reality is anything but. Unlike drinking water, where samples can be obtained from several locations above ground, sampling the collection system occurs underground, from a manhole, that is often at a depth of 6-25 feet. There are no means of sampling directly from a discharger unless a sampling vault has been installed. And this is unlikely unless the business is already a Significant Industrial User under the Industrial Pretreatment Program, or identified dischargers as discussed above.

Section 3.2.1.2 Pilot Testing: ADEQ must develop a variance process for completing site-specific pilot studies for existing advanced water treatment trains already in full scale use.

Section 3.2.2.2. TOC Management: The decision to remove Total Organic Carbon (TOC) beyond the SDWA requirement should remain as a guideline in the AWP Rulemaking. The utility should be allowed to establish treatment goals based on health risk factors with consideration for economic impacts on behalf of their rate payers. TOC should not be further regulated by the State. Scottsdale has no objections to providing continuous TOC data to ADEQ upon request nor with reporting the monthly TOC minimum, maximum, and average. However, caution should be used in the adoption of a target TOC concentration of 2 mg/L (*Reuse Treatment with Ozonation, Biofiltration, and Activated Carbon Adsorption for Total Organic Carbon Control and Disinfection Byproduct Regulation Compliance, May 2020 Summers et al.)* Also, "DBP formation control in a reuse context has not been extensively evaluated, and compliance with drinking water regulations will be part of successful potable reuse treatment", Summers et al. From a Water Environment Federation Report *Characterizing and Controlling Organics in DPR Projects, (Nov 19, 2019: Sandford University, Jacobs, U of A)* for TOC "an absolute value that is universally applied across geographies is not appropriate nor necessarily protective of public health."

Section 3.3.1. Full-scale verification testing: ADEQ must develop a variance process for existing treatment facilities that are currently operational.

Section 3.3.6. Corrosion Control: This is a redundant requirement to what is already required under the Lead and Copper Rule Revised for new source approval. Therefore, having this redundant section will create confusion on where compliance must be met and reported.

Section 3.4.1.2.2. Table 3 *Three Tier Monitoring Requirements*: As stated earlier, no public notification should be required for any chemicals monitored at any location other than the EPDS. It is unnecessary to notify water customers of diverted off-spec water and would cause undue alarm to the public.

In addition, this table indicates that Tier 1, which are primary drinking water standards, are only required to be monitored "similar to drinking water monitoring". This would imply quarterly.

However, the Tier 2 monitoring, which are unregulated chemicals with no regulatory limit must be monitored twice per month. This amount of monitoring is overburdensome, expensive and has limited possible lab options. Emphasis must be placed on surrogate and critical control point monitoring, not on expensive grab sample monitoring.

Section 3.4.1.3. Laboratory Analysis: This section reads that any laboratory and any method that exists can be used for analysis. This deviates from all other compliance programs in the state which require labs to be licensed by the State of Arizona. The broad allowance outlined in the Roadmap may be because there are no recognized methods or certification available for many of these chemicals. All of this puts into question the validity of the data generated.

Section 3.5 Operator Certification: Scottsdale Water disagrees with the recommendation for an AWTF to only be operated by certified Drinking Water (DW) operators, along with the California Advanced Water Treatment Operators (AWTO) certification requirement. As a practical matter, Arizona reclamation facilities are operated by Wastewater (WW) operators as per the AAC R18-5-104(A) class of the facility. Those facilities currently operate under an AZPDES or APP, requiring WW certification. Under our current Direct Potable Reuse Permit (R-512794), Scottsdale's AWTF has successfully been operated by certified WW treatment plant operators since it was permitted in 2019.

If a DW operator certification is required, this severely limits the pool of qualified operators that utilities can employ. ADEQ records a total of 5,631 certified operators of which 714 have Grade 4 Water and 626 have Grade 4 Wastewater. This is 12.6% and 11.1% respectively. This then falls to 5.6% for dual Water and Wastewater Grade 4 certifications. Adding in the prerequisite requirements for testing for the AWTO would drop this number close to zero. The proposal also goes against the California/Nevada AWWA and CWEA model and Final Report: *Development of an Operations and Maintenance Plan and Certification for DPR Systems*. This discrimination leads to reduced work force that is already going thorough difficulty.

The city instead implores ADEQ to recognize the recommendation outlined on page 214 of the *Evaluation of the Feasibility of Developing Uniform Water Recycling Criteria for Direct Potable Reuse – 2016* which states that "O&M requirements for a DPR system exceed the demands of a wastewater or drinking water supply, requiring special operator skills and experience. It is recommended that DPR system operators have a high level of certification in either or both water and wastewater and be trained specifically for operating the DPR system".

The inclusion of elements like a "deep understanding of source water risks" and "risk management strategies" within the scope of operator responsibility may be overly broad and would be better applied to the utility as a whole. These aspects are typically covered by multiple individuals or work groups including industrial pretreatment staff, collections operators, water quality staff and management, and should not be designated solely to the certified operator.

Instead, operators should be trained and aware of response protocols that are established by Operations Plans and be required to take action on these protocols. Each AWP program should be

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required to submit an outline of how all the technical, operational, and regulatory requirements will be met by technical experts, in conjunction with certified operators.

Thank you for your consideration,

Brian K. Biesemeyer, P.E.
Executive Director
Direct: 480 312-5683
bbiesemeyer@scottsdaleaz.gov

Cc: Randy Matas, Deputy Water Quality Division, Matas.Randall@azdeq.gov
Rhona Mallea, Project Manager, reuserulemaking@azdeq.gov