NOTICE OF PROPOSED RULEMAKING

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 9. DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER POLLUTION CONTROL

PREAMBLE

1. Permission to proceed with this proposed rulemaking was granted under A.R.S. § 41-1039 by the governor on:

March 5, 2024

2. Article, Part, or Section Affected (as applicable)	Rulemaking Action
R18-9-B201	Amend
R18-9-A701	Amend
R18-9-B702	Amend
Part E	Repeal
R18-9-E701	Repeal
Article 8	Amend
R18-9-A801	New Section
R18-9-A802	New Section
R18-9-A803	New Section
R18-9-B804	New Section
R18-9-B805	New Section
R18-9-B806	New Section
R18-9-B807	New Section
R18-9-B808	New Section
R18-9-B809	New Section
R18-9-B810	New Section
R18-9-B811	New Section
R18-9-C81	New Section
R18-9-C813	New Section
R18-9-C814	New Section
R18-9-C815	New Section
R18-9-C816	New Section

R18-9-C817	New Section
R18-9-C818	New Section
R18-9-D819	New Section
R18-9-D820	New Section
R18-9-D821	New Section
R18-9-D822	New Section
R18-9-D823	New Section
R18-9-E824	New Section
R18-9-E825	New Section
R18-9-E826	New Section
R18-9-E827	New Section
R18-9-E828	New Section
R18-9-E829	New Section
R18-9-E830	New Section
R18-9-E831	New Section
R18-9-F832	New Section
R18-9-F833	New Section
R18-9-F834	New Section
R18-9-F835	New Section
R18-9-F836	New Section
R18-9-F837	New Section

3. Citations to the agency's statutory rulemaking authority to include the authorizing statute (general) and the implementing statute (specific):

Authorizing statute: A.R.S. §§ 49-104(A)(1), (7); 49-203(A)(7), (9), (10)

Implementing statute: A.R.S. § 49-211

4. Citations to all related notices published in the *Register* that pertain to the current record of the proposed rule:

Notice of Rulemaking Docket Opening: 30 A.A.R. 2879

5. The agency's contact person who can answer questions about the rulemaking:

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6. An agency's justification and reason why a rule should be made, amended, repealed or renumbered, to include an explanation about the rulemaking:

***Introduction*:**

The Arizona Department of Environmental Quality ("ADEQ") is mandated by the Arizona Legislature, pursuant to Arizona Revised Statutes (A.R.S.) § 49-211, to "adopt all rules necessary to establish and implement a direct potable reuse of treated wastewater program, including rules establishing permitting standards and a permit application process". The statute, adopted from House Bill 2861, as enacted in the Second Regular Session on June 28, 2022, became effective on September 24, 2022. For purposes of this Notice and the proposed rule, the term "direct potable reuse" is synonymous with "Advanced Water Purification" (or "AWP"), as the program is now called.

ADEQ, in consideration of Arizona's water supply needs and the Legislative mandate, interpreted A.R.S. § 49-211 as a call to establish an AWP program that is both protective of human health and the environment, as well as imposing minimum burden upon the stakeholder community in achieving that goal. The result of that effort is detailed in the programmatic requirements proposed to be placed in the Arizona Administrative Code (A.A.C.), Title 18, Chapter 9, Article 8, through this Notice of Proposed Rulemaking (NPRM) and through the simultaneously filed associated NPRMs, proposing supporting rules and amendments to Title 18, Chapters 1, 5, 9 and 14.

***Background*:**

Arizona faces significant water supply challenges requiring proactive approaches to conservation and stewardship, in anticipation of decreased water availability in the future. Arizona is currently experiencing a severe and sustained drought, persisting since 1994. The state has experienced an average annual precipitation of approximately 12 inches, and climate data reveals a concerning trend: a consistent reduction of 0.9 inches of rainfall per year over the past three decades (Arizona State University, 2023, Climate

of Arizona, https://azclimate.asu.edu/climate/). As a result of the continuing mega-drought, a Drought Emergency Declaration has existed since 1999. The impacts can be felt heavily in the rural areas of the state, where alternative water supplies are generally very limited and the economy is strongly affected by drought (e.g., grazing, irrigated agriculture, recreation, forestry). Most of rural Arizona relies exclusively on groundwater as its primary water source and lacks the groundwater regulations and conservation requirements which have been present in the state's active management areas (AMAs) and irrigation non-expansion areas (INAs). In addition to the reduced precipitation within Arizona, the Colorado River Basin is also facing decades-long drought conditions, which have led to historically low water levels in Colorado River system reservoirs. As a result, Arizona has implemented measures to reduce its consumption of Colorado River water. The Lower Colorado River Basin first experienced a Tier 1 Shortage as agreed in the 2007 Interim Guidelines and the Drought Contingency Plan in 2021. In 2022, Bureau of Reclamation Commissioner Camille Touton called on the Colorado River states to conserve between 2-4 million acre feet per year to address the critically low levels in Lake Powell and Lake Mead following a dire water year. Fortunately, voluntary reductions in the Lower Basin and a healthy water year 2022 averted a decline to critically low elevations. However, as the Basin States look ahead, climate projections and historical trends indicate that the Basin is likely to face increasing average temperatures and reduced precipitation in the coming years. Arizonans will likely be called upon to live with further reduced Colorado River supplies for the foreseeable future as the next set of operational guidelines for the Colorado River are finalized.

Beyond the shrinking water supply, economic growth presents water providers with formidable challenges in meeting demand. As water-intensive industries relocate to Arizona, industrial water demands may increase. Furthermore, there may be challenges with maintaining the necessary housing growth due to the release of the new models of groundwater conditions in the Phoenix and Pinal AMAs. The results of the groundwater flow model projections show that over a period of 100 years, the Phoenix AMA will experience 4.86 million acre-feet (maf) of unmet demand for groundwater supplies and the Pinal AMA will experience 8.1 maf of unmet demand for groundwater supplies, given current conditions. In keeping with these findings of unmet demand, the State will not approve new determinations of Assured Water Supply within the Phoenix and Pinal AMAs based on groundwater supplies. This will lead to an increased competition for limited alternative water supplies. As growth continues, there will be an increasing need for sustainable and innovative water resource management strategies to accommodate the state's evolving needs.

***What is AWP*?**

Advanced Water Purification (AWP) is defined as the treatment and distribution of a municipal wastewater stream for use as potable water without the use or with limited use of an environmental buffer (US EPA, 2017, Potable Reuse Compendium). AWP has been shown to be a safe and effective source of potable water over decades of implementation in projects that have been installed worldwide at facilities in Big Spring, Texas (2013); Wichita Falls, Texas (2014); Namibia (1968 and 2002); Singapore (2019); and South Africa (2011) (Lahnsteiner, J., Van Rensburg, P., & Esterhuizen, J., 2018, Direct potable reuse–a feasible water

management option. Journal of Water Reuse and Desalination, 8(1), 14-28).

AWP applications typically consist of a conventional water reclamation facility (WRF) or wastewater treatment plant (WWTP) that performs solids, carbon, nutrient, and pathogen removal and an advanced water treatment facility (AWTF) that provides additional pathogen and trace chemical removal. An AWTF is a utility or treatment plant where recycled wastewater is treated to produce purified water to meet specific AWP requirements. AWTFs use a multi-barrier approach where several redundant unit processes in series are installed to treat WRF effluent to potable water standards. Depending on the site-specific infrastructure configuration and treatment capabilities, the AWTF effluent may be introduced into several different locations of the potable water treatment and distribution system to be reused: (i) in the intake to the existing drinking water treatment facility (DWTF); (ii) after the DWTF and prior to the potable water distribution system; or (iii) Directly into the potable water distribution system.

***Evolution of AWP in Regulations*:**

A predecessor to the AWP program was adopted in the A.A.C. in 2018 at R18-9-E701, including a definition of "[a]dvanced reclaimed water treatment facility" at R18-9-A701(1). An associated NPRM filed simultaneously with this NPRM will repeal these rules in their entirety to make way for the AWP program. This prior, less detailed, single-ruled program was placed in Title 18, Chapter 9, Article 7 of the A.A.C. Article 7 is entitled "Use of Recycled Water". Part E of Article 7 was entitled "Purified Water for Potable Use" and R18-9-E701 was entitled "Recycled Water Individual Permit for an Advanced Reclaimed Water Treatment Facility". R18-9-E701 detailed basic requirements for an advanced reclaimed water treatment facility and, during the rule's tenure, was used to permit one such facility. The facility was not authorized to, and did not, distribute purified water as drinking water through established conveyances or networks. As was stated above, in recent years, the Arizona Legislature determined a need for a more robust regulatory program for AWP. The Legislature passed House Bill 2861 into law in 2022, effectuating statute A.R.S. § 49-211, which led directly to the establishment of the proposed AWP program and the repeal of the previous program.

***Associated Rulemakings*:**

This proposed rulemaking includes four NPRMs, adding, repealing or amending rules in A.A.C. Title 18. Environmental Quality:

- Chapter 1 (Department of Environmental Quality - Administration),
- Chapter 5 (Department of Environmental Quality - Environmental Reviews and Certification),
- Chapter 9 (Department of Environmental Quality - Water Pollution Control), and
- Chapter 14 (Department of Environmental Quality - Permit and Compliance Fees).

The proposed changes to Chapter 1 are specific to updating the Licensing Time-Frame requirements in Article 5 to account for the new AWP program. The proposed changes to Chapter 5 are specific to amending the Minimum Design Criteria in Article 5 to correspond with the rules in the AWP program which outline the interconnection between AWP and the Safe Drinking Water Act,

specifically between AWP permitting and design requirements and those in Article 5, applicable to public water systems. The proposed changes in Chapter 5 aim to achieve parity between the two programs by clarifying, in each, how and where the program components are applicable. The proposed additions, amendments and repeals to Chapter 9 are all aimed at making way for and establishing the AWP regulatory program. The proposed changes to Chapter 14 are specific to updating the Water Quality fees in Article 1 to accommodate the AWP program commensurate with other water quality programs.

***Placement, Structure and Design of the Proposed AWP Programmatic Rules*:**

The AWP regulatory program's central rules are proposed to be placed in Title 18 (Environmental Quality), Chapter 9. (Department of Environmental Quality - Water Pollution Control), Article 8. (Advanced Water Purification) of the A.A.C. Article 8 was vacant at the time this NPRM was filed, with previous rules in Article 8 repealed since the year 2000.

The immediate subsections below explain the program's primary components and rules, distinguished by the "Parts" proposed within Article 8:

- Part A. General Provisions: R18-9-A801 - R18-9-A803

This Part contains provisions applicable to the entire Article, including definitions and incorporation by reference material. Notably, R18-9-A803 is entitled "Applicability of the Safe Drinking Water Act" and details the interconnection between the AWP program and the Safe Drinking Water Act (42 U.S.C. 300f *et seq.*). The AWP regulatory program derives its authority from Arizona state statute, as is detailed above. At the time of this rulemaking, the AWP subject matter had no direct federal regulatory analog. However, due to the flexibility of the AWP program and the multitude of options available to an AWP permittee concerning how to best employ AWP in accordance with the system needs, infrastructure, and economic situation, an AWTF may introduce advanced treated water at several locations, including to a public water system as a source (advanced treated water), or directly to distribution for human consumption (finished water). This means that there are potential interconnections between the AWP program and the protections of the Safe Drinking Water Act. Therefore, the content of R18-9-A803 was necessary to outline that intersection. For example, the section presumptively characterizes treated wastewater as surface water under the Safe Drinking Water Act, provides that nothing in the AWP program exempts any AWP facility from applicable Safe Drinking Water Act requirements, and clarifies the connections between A.A.C. Title 18, Chapter 5, Article 5, and the AWP program.

- Part B. General Program Requirements: R18-9-B804 - R18-9-B811

This Part contains foundational requirements of the AWP program. R18-9-B804, entitled "Advanced Water Purification Operator Certification" sets forth the proposed applicability and requirements for AWTF operators under a new AWP operator certification. The proposed rule requires an AWP operator to i) pass an AWP validated examination; ii) meet advanced water treatment qualifying experience requirements; and iii) be certified as either a Grade 3 or Grade 4 drinking water or wastewater operator. Under subsection (F) of the proposed rule, ADEQ proposes to administer AWP operator examinations, which will include topics specific

to understanding and operation of advanced treatment technologies at an AWTF. In order to ensure that all applicants are knowledgeable of drinking water treatment technologies and operations, ADEQ proposes that applicants with a Grade 3 or Grade 4 wastewater treatment operator certification take a separate version of the AWP operator examination which tests drinking water knowledge equivalent to existing Grade 3 drinking water treatment operator examinations. Types of AWP operators include shift operators and operators in direct responsible charge. Only applicants with Grade 4 drinking water operator experience are eligible for certification as AWP operator in direct responsible charge. Furthermore, in subsection (K), ADEQ proposes additional minimum qualifying experience, requiring all applicants to have at least one year of advanced water treatment qualifying experience. Advanced water treatment qualifying experience may be obtained by operating an AWP pilot facility, operating an AWP demonstration facility that does not distribute finished water, through a demonstration of experiential reciprocity, or through an apprenticeship under an AWP operator on-site at an AWP facility. The proposed rule includes transition provisions in subsection (M), providing a grace period of two years from the effective date of the AWP programmatic rules in Chapter 9, during which time AWTF operators are exempted from the AWP operator certification requirements in R18-9-B804 in order to allow operators reasonable time to obtain certification under the new program. During this transition period, the proposed rule requires AWTF operators to be Grade 4 drinking water-certified operators who have completed additional Department-approved training, as appropriate.

R18-9-B805, entitled, "Advanced Water Purification Responsible Agency Formation; Joint Plan", details proposed requirements for formation of the entity, known as the Advanced Water Purification Responsible Agency (AWPRA), that applies for permitting under the AWP program. R18-9-B806, entitled "General Requirements", details program prohibitions, confidentiality provisions, and the general requirement that treated wastewater used to supply an AWP project must originate as municipal wastewater. R18-9-B807, entitled "Inspections, Violations, and Enforcement", clarifies the applicable enforcement authority related to the AWP program. R18-9-B808, entitled "Recordkeeping", details proposed requirements for the AWPRA related to certification, collection, and retention of records. R18-9-B809, entitled "Construction and Compliance with Plans", regulates facility modifications prior to permitting. R18-9-B810, entitled "Record Drawings", proposes requirements surrounding the recording and certification of project drawings. R18-9-B811, entitled "Outreach; Public Communications Plan", sets forth requirements for an AWPRA's Public Communications Plan.

- Part C. Pre-Permit and Permit Requirements: R18-9-C812 - R18-9-C818

This Part contains requirements in preparation for, and including, permit application. It includes a pre-application conference option in order to facilitate a discussion between the applicant and the Department in the preliminary stages of an application process. The Part also includes details on when a "Project Advisory Committee" may be formed to assist the Department and the applicant in project development and review. R18-9-C813, entitled, "Applicant Pathways Depending on National Pretreatment

Program Applicability" details pre-permit application procedural requirements of an applicant depending on their applicability to the Clean Water Act's National Pretreatment Program (NPP). The Department proposes to enable two different pre-permit procedural approaches, one for AWPRA applicants that are subject to the NPP, and one for AWPRA applicants that are not subject to the NPP. These two pathways were created due to the importance of, and advantage associated with, NPP experience that an applicant will have in sewershed characterization, knowledge, etc., and is intended to promote application autonomy for more sophisticated facilities along with opportunities for Department assistance and review where applicable.

R18-9-C814, entitled, "Initial Source Water Characterization" details chemical and pathogen monitoring of an Advanced Water Treatment Facility's (AWTF) treated wastewater source, which comes from a Water Reclamation Facility (WRF) or Wastewater Treatment Plant (WWTP). Initial Source Water Characterization or "ISWC" is an important step in identifying chemical and pathogen existence and load in the treated wastewater source in order to determine how to address control through treatment, source control, or a combination of the two. Of note, the ISWC Report must be finalized within three years of ISWC monitoring commencement, unless the Director allows otherwise. Such an expectation will be difficult to justify and must be accompanied by robust data. R18-9-C815, entitled, "Pilot Study" details the requirements of pilot testing which assists in making decisions about the selection of specific advanced water treatment (AWT) processes, verifying the performance of chosen treatment processes, providing the opportunity to evaluate the effectiveness of different types of treatment processes and designing of the full-scale AWP process. Notably, the rule allows an applicant to conduct "Full-Scale Verification" in lieu of a pilot study if the applicant chooses to build to full scale immediately, instead of after the building or a pilot-scale facility. This reflects the additional flexibility incorporated into the rule for various types of planned facilities by providing a reasonable construction pathway for facilities that opt to build full-scale at this stage. R18-9-C816, entitled, "Permit Application" details the permit application requirements and process. R18-9-C817, entitled, "Demonstration permit" details the demonstration permit application requirements and process. An AWP Demonstration permit may be issued under the AWP program for the purpose of showcasing an AWTF for public outreach, finished water tasting, and other related non-distribution purposes. R18-9-C818, entitled, "Compliance Schedule", prescribes the requirements on the AWPRA regarding compliance schedules established by the Department in the AWP permit. It further prohibits the delivery of advanced treated water from an AWTF, or distribution of finished water, until the Department approves all compliance schedule requirements.

- Part D. General Permit Requirements: R18-9-D819 - R18-9-D823

This Part contains proposed requirements and conditions of permitting. It includes public notice and participation provisions in R18-9-D819 and R18-9-D820, respectively. Additionally, R18-9-D821, entitled "Permit Amendments" prescribes the proposed permit amendment process, which includes two amendment categories: significant and minor. R18-9-D822, entitled "Permit Term; Permit Renewal" details the five-year term of an AWP permit and the renewal application process. Lastly, R18-9-D823, entitled

"Permit Suspension, Revocation, Denial, or Termination" details conditions and factors surrounding ADEQ's decision to revoke, deny, or terminate an AWP permit or AWP demonstration permit.

- Part E. Constituent Control, Monitoring, and Reporting: R18-9-E824 - R18-9-E831

This Part contains the requirements for applicant and permittee constituent control, as well as, monitoring and reporting in preparation for permit application and as a permittee in ongoing permitted operations.

R18-9-E824, entitled, "Enhanced Source Control" details the requirements and process permittees must adhere to in inventorying their sewershed, by, in part, identifying "potentially impactful non-domestic dischargers" and determining a subset therein of "impactful non-domestic dischargers". Additional control measures are required for a permitttee's "impactful non-domestic dischargers". The rule also details the general requirements of a permittee's enhanced source control program. R18-9-E825, entitled, "Tier 1 Chemical Control; Maximum Contaminant Levels" establishes the Safe Drinking Water Act's Primary Drinking Water Maximum Contaminant Levels or (MCLs) as the "Tier 1" chemicals for regulation under the AWP program.

R18-9-E826, entitled, "Tier 2 Chemical Control; Advanced Water Purification-Specific Chemicals", details the process for identifying, calculating and determining the "Tier 2" chemicals for regulation under the AWP program. Tier 2 chemicals are contaminants identified under R18-9-E826 that are not regulated in the Safe Drinking Water Act, but may be present in the treated wastewater source and may pose human health concerns. Due to elevated health concerns with the treated wastewater source of AWTFs and likewise protections in similar regulatory programs and facilities around the world, the Department proposes to require applicants and permittees to generate and maintain a Tier 2 chemical list for treatment or source control (regulation). Tier 2 list determination and associated action levels to be generated under the rule will be largely based on the Environmental Protection Agency's (EPA) "2018 Edition of the Drinking Water Standards and Health Advisories Tables" (EPA HA Table). In the case where a chemical does not have a health advisory in the EPA HA Table, but does have a "notification level" in another state's drinking water program, the Department proposes a comparison of the chemical's projected daily concentration in the AWTF's treated wastewater influent with the notification level and, if the concentration exceeds the notification level, the chemical shall become a Tier 2 chemical for the purposes of the program. The only chemical that falls into this category at the time of this rulemaking is Trimethylbenzene (1,2,4-) (CAS No. 95-63-6), which has a notification level established in California's drinking water regulations (*See* Heading No. 7 below for reference). In the case where a chemical does not have a health advisory in either the EPA HA Table, nor another state's drinking water program, the Department proposes a comparison of the chemical's projected daily concentration with a set of interim, Departmentally-generated health advisories, that may be updated or removed via rulemaking as additional information becomes available. If the concentration exceeds the Departmentally-generated health advisory, the chemical shall become a Tier 2 chemical, but only for ongoing monitoring purposes pursuant to R18-9-E829. Additionally, this subcategory of Tier 2 chemicals is exempt from all compliance requirements under R18-9-E829(D) and are not

to be considered part of the Projected Chemical Treatment List in R18-9-E826(F), nor will be required to have action levels. The reason behind the special requirements for this sub-category is that while these chemicals are not yet widely regulated, the Department has determined a need to further examine and monitor them at this time. The EPA HA Table contains eight chemicals without health advisory values. Therefore, the Department generated health advisories, in this proposed rule, for those eight chemicals using the same formulas and assumptions EPA used to develop the EPA HA Table, which can be found in the EPA publication, "Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)" (*See* Heading No. 7 below for other studies leveraged in generating these health advisories). In the case where a chemical does not have a health advisory in the EPA HA Table, in another state's drinking water program, nor one established by the Department, but does have a Reference Dose (RfD) or Cancer Slope Factor (CSF) in credible peer-reviewed literature or state or Federal databases, the Department proposes consultation between the applicant, the Department and/or the Project Advisory Committee (PAC) to determine a health advisory value. Thereafter, the applicant would compare the chemical's projected daily concentration with the determined health advisory. If the concentration exceeds the determined health advisory, the chemical shall become a Tier 2 chemical. Lastly, in the rare case where a chemical does not have a health advisory in the EPA HA Table, in another state's drinking water program, in the Departmentally-established list, nor a RfD or CSF in credible peer-reviewed literature or state or Federal databases, the Department proposes that the applicant or permittee determine the health risk of the chemical through reasonably appropriate bioanalytical studies and/or bioassays and propose an action level that is reasonably protective of human health.

R18-9-E827, entitled, "Tier 3 Chemical Control; Performance-Based Indicators" details the requirement of an applicant or permittee to monitor the constituent reduction performance of selected treatment processes at pilot and full-scale treatment trains or to provide an indication of an individual process's failure. Performance-based indicators (pathogens, chemicals or compounds) are selected and proposed by applicants or permittees along with critical control points along the treatment train, all with the purpose of isolating process performance.

R18-9-E828, entitled, "Pathogen Control" details the two options an applicant or permittee has in controlling pathogens. Pathogen control is largely based on standardized reduction of the three "reference pathogens", which are enteric viruses ("enteric"), Giardia lamblia cysts ("Giardia") and Cryptosporidium oocysts ("Crypto"). Studies show that certain reduction of these three reference pathogens can be used as an indicator of general pathogen reduction. The Department proposes a "Standard Approach" to pathogen control at a log reduction of the three aforementioned reference pathogens at 13 log for enteric, 10 log for Giardia and 10 log for Crypto. This approach requires no pathogen site-specific sampling. The other option is the "Site-Specific Approach", which includes a program of site-specific pathogen sampling resulting in customized log reduction values for the reference pathogens.

R18-9-E829 and R18-9-E830 detail the ongoing monitoring and reporting requirements, respectively, while R18-9-E831 details

the proposed requirements related to annual reporting.

- Part F. Technical and Operational Requirements: R18-9-F832 - R18-9-F837

This Part contains the technical and operation requirements of the AWP regulatory program. R18-9-F832, entitled, "Minimum Design Criteria" details the basic or minimum, mandatory requirements of an AWP operation's design, mostly pertaining to the AWTF. Minimum requirements in this section address design mandates concerning chemical and pathogen control, Total Organic Carbon removal, corrosion control, nitrogen management, Advanced Oxidation Processes (AOP), failure response time, cross-connection and minimum requirements for WRFs that are a source for the treated wastewater of an AWTF.

R18-9-F833, entitled, "Technical, Managerial, and Financial Demonstration" details the requirements of an applicant or permittee to demonstrate technical, managerial and financial capacity to operate, manage and fund the project, among other relevant considerations.

R18-9-F834, entitled, "Total Organic Carbon Management" details the requirement of an applicant or permittee to manage Total Organic Carbon (TOC) in one of two ways. The first approach ("Standard Approach") requires the applicant or permittee to maintain a limit of 2 mg/L in the product water of the AWTF (either "advanced treated water" or "finished water"). This approach requires no site-specific TOC sampling. The second approach ("Site-Specific Approach") requires conducting two procedures: (1) "Trace Organics Removal Procedure", involving the sampling and characterizing of the original drinking water sources that feed water consumption in a service area that is then collected in sewersheds and routed to and treated by a WRF that is a source of treated wastewater for an AWTF, and (2) "Disinfection Byproducts (DBP) Precursor Reduction Procedure", utilizing (in and of itself) the lower resultant value of two DBP-specific procedures; (a) Method 5710 C "Simulated Distribution System Trihalomethanes" which establishes a TOC value in the product water of the AWTF (either "advanced treated water" or "finished water"), and (b) "CCL5 - Disinfectant Byproducts Sampling Method", which requires sampling for only the DBPs that exist in both EPA's "Contaminant Candidate List 5 - Exhibit 1b - Unregulated DBPs in the DBP Group on CCL 5" and EPA's "2018 Edition of the Drinking Water Standards and Health Advisories Tables" in the product water of the AWTF (either "advanced treated water" or "finished water"). If the sampling results for any one DBP are lower than the corresponding health advisory, that value is the Procedure 2(b) TOC value. Thereafter, the applicant or permittee determines the lower of the two TOC values from Procedures 2(a) and 2(b) which becomes the TOC value for Procedure 2 overall. Once the TOC values are established, the applicant or permittee's Site-Specific Approach or Limit, concerning TOC Management, is the lower of the two TOC values from Procedures 1 and 2. Upon issuance of a permit and AWTF operation, a permittee may switch between the two approaches each calendar year.

R18-9-F835, entitled, "Full Scale Verification" details the proposed requirements of verifying an AWTF's treatment train performance once built. Under the proposed rules, an applicant or permittee could be issued a limited permit and perform full-scale verification thereafter, through a compliance schedule item (*see* proposed rule R18-9-C816(E) and R18-9-C818).

R18-9-F836, entitled, "Operations Plan" details the requirements of an operations plan an applicant or permittee must develop for Departmental approval and follow throughout permitted operations.

R18-9-F837, entitled, "Vulnerability Assessment" details the requirements of a vulnerability assessment that must be conducted by the applicant for submission and approval by the Department for the AWP project for the purpose of identifying areas and processes with a potential to be vulnerable to attack, sabotage, or disruption.

***Further Explanation*:**

Further explanation on the program can be found in the Department's summary of the proposed program, known as the "Roadmap", available online at https://static.azdeq.gov/wqd/awp/roadmap.pdf. Also, the Department has responded to and published, online, an assortment of technical questions, addressing stakeholder concerns and clarifying decisions in the design of the regulatory program, under the AWP Rulemaking agency website at https://azdeq.gov/awp-resources. Other explanatory resources are available at the rulemaking's general webpage at https://azdeq.gov/awp-rulemaking.

***Changes to Existing Regulations*:**

This NPRM includes in its scope the removal of R18-9-A701 and R18-9-E701 (*See* "Evolution of AWP in Regulations" subsection above) and the amending of R18-9-B201 and R18-9-B702. R18-9-B201(E) provides that "[a] person shall not create or maintain a connection between any part of a sewage treatment facility and a potable water supply so that sewage or wastewater contaminates a potable or public water supply." In preserving the general prohibition, but excepting AWP projects, the Department proposes to add the following second sentence after the first sentence in R18-9-B201(E), "[a] person may only create and maintain a connection between sewage treatment facilities, advanced water treatment facilities and potable water supply under an Advanced Water Purification permit issued pursuant to Article 8 of this Chapter." R18-9-B702(H) lists prohibited activities for reclaimed water usage under Article 7 (Use of Recycled Water). Under the existing rule, subsection R18-9-B702(H)(2) prohibits "[p]roviding water for human consumption from a reclaimed water source *except as allowed in Part E of this Article*" (emphasis added). Since R18-9-E701, which is the sole rule in "Part E", is proposed to be removed by this rulemaking, it is appropriate to remove the corresponding language in the prohibition in subsection R18-9-B702(H)(2) for uniformity.

***Stakeholder Engagement*:**

ADEQ embarked on a significant stakeholder engagement process at two informal rulemaking stages: 1) AWP program framework and guiding principle development; and 2) AWP draft rule review and comments.

AWP program framework and guiding principle development:

Beginning in 2023, ADEQ initiated in-depth stakeholder engagement, comprising the foundational data upon which the AWP program was designed. ADEQ, through the assistance of HMA Public Relations and BrandOutlook, conducted an analysis of public perceptions surrounding AWP with the goal of gathering informative data for the development of the program rules. The

objectives of the initiative included: understanding perceptions about the urgency of the water situation in Arizona; determining the top concerns and efforts made to alleviate water issues in Arizona; determining what people think about AWP; gathering information about barriers to implementing AWP; understanding best methods of communicating AWP to the public; and gaining feedback on the role of ADEQ in presenting AWP as a viable solution to water needs to municipalities and end users. The initiative included two phases: qualitative stakeholder interviews and a quantitative survey of Arizonans.

Under Phase One, ADEQ engaged with representatives from leading entities and organizations comprising eight key stakeholder groups including: utilities; government; academia; policy; commercial; community; agriculture; and healthcare. A summary of the key findings are as follows:

- Participants agreed that Arizona faces water challenges both now and in the future;
- Participants indicated general awareness of current water initiatives to mitigate the water issues in Arizona;
- Participants indicated disparate knowledge of AWP as a water supply option;
- Key top of mind benefits of AWP included water supply, economics, and the environment;
- Key top of mind drawbacks of AWP included the 'yuck' factor, trust issues, skepticism, and cost.
- There are clear opportunities to shift perceptions;
- The general public should be engaged early in the adoption effort;
- Sophisticated water stakeholders are willing and ready to adopt AWP but recognize the need for flexibility; and
- ADEQ has the responsibility to engage in a holistic adoption approach (*see* ADEQ, Final Report - Understanding Perceptions and Barriers to Direct Potable reuse (DPR) Adoption, Phase 1 - Qualitative Research with Stakeholders, April 10, 2023, https://static.azdeq.gov/wqd/awp/dpr_rpt_23.pdf).

Under Phase Two, ADEQ solicited a blind survey of 1,314 Arizona residents across 13 counties. A summary of the key findings are as follows:

- Residents indicated broad concern about water supply now and in the near future;
- Residents indicated personal water consumption is primarily filtered or bottled;
- Residents were receptive to AWP as a viable option to mitigate water supply concerns, with 70% indicating they were "somewhat" or "very likely" to drink AWP water;
- Residents indicated such barriers to AWP adoption as skepticism regarding safety, 'yuck' factor, and cost; and
- Residents indicated that educational outreach can overcome barriers to AWP adoption (*see* ADEQ, Final Report - 2024 Quantitative Research Regarding Advanced Water Purification (AWP), May 31, 2024, https://static.azdeq.gov/wqd/awp/rpt_24.pdf).

Following the stakeholder engagement effort, ADEQ identified several stakeholder groups for further engagement surrounding

AWP program development and adoption and convened a Technical Advisory Group (TAG) (*see* ADEQ, Technical Advisory Group, https://azdeq.gov/awp-tag). The TAG consisted of experts and representatives from the following groups: academia; small, medium, and large utilities; regulatory agencies; and consulting engineers and scientists. Commencing in 2022, the TAG routinely met twice per month - 114 meetings - and, on July 14, 2023, delivered to ADEQ the "Advanced Water Purification (AWP): Technical Advisory Group (TAG) Recommendations" (Technical Advisory Group, Advanced Water Purification (AWP): Technical Advisory Group (TAG) Recommendations, July 14, 2023, https://static.azdeq.gov/wqd/awp/tag_recommendations.pdf). Further outreach included over a dozen nation-wide presentations, discussions, teaching events, and interviews on AWP program components (*see* ADEQ, Outreach Participation, https://azdeq.gov/awp-outreach). Additionally, ADEQ has developed various public-facing resources such as:

- Fact Sheet (*see* ADEQ, Fact Sheet, What is Advanced Water Purification?, https://static.azdeq.gov/wqd/dpr/fs.pdf);
- Infographic (*see* ADEQ, Advanced Water Purification, https://static.azdeq.gov/wqd/awp/infographic.pdf);
- FAQs related to AWP and public water systems (*see* ADEQ, Public Water Systems FAQs, https://azdeq.gov/awp-faqs-PWS); and
- Comprehensive AWP webpage including information surrounding what AWP is, why it's important for Arizona, how it works, frequently asked questions, and an explainer video (*see* ADEQ, Advanced Water Purification, https://azdeq.gov/awp).

These myriad stakeholder engagement efforts were critical in ADEQ's development and public release of the "Advanced Water Purification: Proposed Program Roadmap" ("Roadmap") in November 2023 (*see* ADEQ, Advanced Water Purification Proposed Program Roadmap, November 2023, https://static.azdeq.gov/wqd/awp/roadmap.pdf). The Roadmap synthesized TAG recommendations and ADEQ's own technical expertise as well as accounted for stakeholder perceptions and feedback. The Roadmap summarized and explained the AWP program's key elements in an effort to assist stakeholders in future planning for AWP implementation, support public education and awareness, and provide transparency on ADEQ's intention and critical pathway to rulemaking on AWP.

Following the release of the Roadmap in November 2023, ADEQ held a 30-day public comment period to gather input and feedback from stakeholders and interested parties. A dozen substantial comments were received during the comment period, including comments from such stakeholders as: City of Flagstaff; City of Phoenix; Scottsdale Water; Tucson Water; and Water Reuse Arizona. ADEQ carefully reviewed and considered all comments received, and issued a cumulative response to comments on July 8, 2024 (*see* ADEQ, Advanced Water Purification Proposed Program Roadmap ADEQ Response to Comments, July 8, 2024, https://static.azdeq.gov/wqd/awp/rtc.pdf).

<u>AWP draft rule review and comments:</u>

ADEQ released the draft rule of the AWP program - including draft programmatic rules in 18 A.A.C. Chapter 9, draft licensing time frame rules in 18 A.A.C. Chapter 1, and draft fee rules in 18 A.A.C. Chapter 14 - on July 9, 2024 (*see* ADEQ, Advanced Water Purification, https://azdeq.gov/awp-rulemaking). Following the release of the draft rules, ADEQ held a 30-day public comment period to, once again, gather input and feedback from stakeholders and interested parties. During this period, ADEQ organized and facilitated two meetings, a Tribal Listening Session on July 31, 2024, and a Stakeholder Meeting on August 1, 2024. ADEQ received 28 comments during this period, representing large stakeholder groups as well as interested individuals. All comments were critically analyzed and utilized throughout ADEQ's proposed rule drafting process between July and September 2024. ADEQ is scheduled to release responses to those comments in mid-October.

7. A reference to any study relevant to the rule that the agency reviewed and proposes either to rely on or not to rely on in its evaluation of or justification for the rule, where the public may obtain or review each study, all data underlying each study, and any analysis of each study and other supporting material:

ADEQ reviewed hundreds of studies relevant to the development of the AWP program. Those studies informed and shaped the program and were relied upon to various degrees. ADEQ evaluates and justifies usage of the data in the studies relied upon in its "*Advanced Water Purification Proposed Program Roadmap"* ("Roadmap"). The public may review the Roadmap online at the following website: https://static.azdeq.gov/wqd/awp/roadmap.pdf. The public may review a list of the studies relied upon as cited references in Section 7 of the Roadmap or may obtain copies of any study from the Department by request. Requests can be submitted to the Department by email at reuserulemaking@azdeq.gov or by mail to Arizona Department of Environmental Quality, 1110 W. Washington Ave. Phoenix, AZ 85007.

Since the Roadmap was released, ADEQ has relied upon the following additional studies in further development of the program, which are listed below and on file with the agency:

- ***Standard Methods for the Examination of Water and Wastewater, 24th ed.:***

  Summary: This book of methods is a comprehensive and standard text for water quality analysis used by researchers and regulators to assess properties of water and wastewater samples.

  Study Resource: ADEQ incorporated a number of standard methodologies by reference into the rule requirements for the AWP program. This is the most up-to-date and comprehensive resource for measuring the biological, chemical and physical characteristics of water samples and offers guidance to choose among available methods for specific elements and compounds. In this rulemaking, it is being used to define an approach for TOC analysis and for analysis of water quality samples.

  Public Review: The public may review this study or may obtain copies from the Department by request. Requests can be submitted to the Department by email at awqs@azdeq.gov or by mail to Arizona Department of Environmental

Quality, 1110 W. Washington Ave. Phoenix, AZ 85007.

Reference: American Public Health Association, American Water Works Association, Water Environment Federation. Lipps WC, Braun-Howland EB, Baxter TE, eds. Standard Methods for the Examination of Water and Wastewater. 24th ed. Washington DC: APHA Press; 2023.

- ***Fate of Pharmaceuticals and Personal Care Products Through Municipal Wastewater Treatment Processes:***

  Summary: This is a Water Environment Research Foundation book addressing removal of endocrine disrupting compounds, pharmaceuticals, and personal care products by full-scale wastewater treatment plants.

  Study Resource: ADEQ incorporated the study's recommendations about Solids Retention Time (SRT) of 15 days to achieve consistent removal above 80% of endocrine disrupting compounds, pharmaceutical and personal care products typically occurring in wastewater.

  Public Review: The public may review this study or may obtain copies from the Department by request. Requests can be submitted to the Department by email at awqs@azdeq.gov or by mail to Arizona Department of Environmental Quality, 1110 W. Washington Ave. Phoenix, AZ 85007.

  Reference: Stephenson, R. and Oppenheimer, Joan. Fate of Pharmaceuticals and Personal Care Products Through Municipal Wastewater Treatment Processes; 2007.

- ***Chemical Update Worksheet:***

  Summary: This is a study performed by the State of Michigan Department of Environmental Quality for Rule

  Study Resource: ADEQ incorporated the Reference Dose or Oral cancer slope factors (CSF) presented in this study for Benz[a]anthracene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Chrysene, Dimethyl phthalate, Indeno[1,2,3,-c,d]pyrene and Phenanthrene to establish Health Advisories. These compounds don't have a Health Advisory in EPA's "2018 Edition of the Drinking Water Standards and Health Advisories Tables".

  Public Review: The public may review this study or may obtain copies from the Department by request. Requests can be submitted to the Department by email at awqs@azdeq.gov or by mail to Arizona Department of Environmental Quality, 1110 W. Washington Ave. Phoenix, AZ 85007.

  References:

  - Michigan DEQ. Chemical update worksheet for Benz(a)anthracene [CASRN = 56-55-3]. 2015. Accessed 10/07/2024.
  - Michigan DEQ. Chemical update worksheet for Benzo[b]fluoranthene [CASRN = 205-99-2]. 2015. Accessed 10/07/2024.
  - Michigan DEQ. Chemical update worksheet for Benzo[g,h,i]perylene [CASRN = 191-24-2]. 2015. Accessed

10/07/2024.

- Michigan DEQ. Chemical update worksheet for Chrysene [CASRN = 218-01-9]. 2015. Accessed 10/07/2024.
- Michigan DEQ. Chemical update worksheet for Dimethyl phthalate [CASRN = 131-11-3]. 2015. Accessed 10/07/2024.
- Michigan DEQ. Chemical update worksheet for Indeno[1,2,3,-c,d]pyrene [CASRN = 193-39-5]. 2015. Accessed 10/07/2024.
- Michigan DEQ. Chemical update worksheet for Phenanthrene [CASRN = 85-01-8]. 2015. Accessed 10/07/2024.

- ***Toxicity criteria on chemicals evaluated by COEHHA*:**

  Summary: This is a study performed by the California Office of Environmental Health Hazard Assessment for Rule (2015). Access date: 10/07/2024

  Study Resource: ADEQ incorporated the Oral cancer slope factors (CSF) calculated in this study for Benzo[k]fluoranthene. This compound does not have a Health Advisory in EPA's "2018 Edition of the Drinking Water Standards and Health Advisories Tables".

  Public Review: The public may review this study or may obtain copies from the Department by request. Requests can be submitted to the Department by email at awqs@azdeq.gov or by mail to Arizona Department of Environmental Quality, 1110 W. Washington Ave. Phoenix, AZ 85007.

  Reference: California Office of Environmental Health Hazard Assessment (1987). Benzo[k]fluoranthene [CASRN = 207-08-9]. Access date: 10/07/2024.

- ***California Division of Drinking Water*:**

  Summary: This is a study performed by the California Division for Drinking Water for Rule (2001). Access date: 10/07/2024.

  Study Resource: ADEQ incorporated the Notification Level of 0.33 mg/L established for Trimethylbenzene (1,2,4-). This compound does not have a Health Advisory in EPA's "2018 Edition of the Drinking Water Standards and Health Advisories Tables".

  Public Review: The public may review this study or may obtain copies from the Department by request. Requests can be submitted to the Department by email at awqs@azdeq.gov or by mail to Arizona Department of Environmental Quality, 1110 W. Washington Ave. Phoenix, AZ 85007.

  Reference: California Division of Drinking Water (2001). Trimethylbenzene (1,2,4-) [CASRN = 95-63-6]. Access date: 10/07/2024.

8. A showing of good cause why the rulemaking is necessary to promote a statewide interest if the rulemaking will diminish a previous grant of authority of a political subdivision of this state:

Not applicable.

9. The preliminary summary of the economic, small business, and consumer impact:

Establishing the AWP program is a requirement ADEQ has been given from the Arizona State Legislature (ARS § 49-211). Participation in the AWP program is not compulsory, but rather an opt-in or voluntary regulatory program. AWP is an innovative set of water treatment processes, requiring advanced technology, applied at an advanced water treatment facility (AWTF) that directly purifies treated wastewater originating from a community's wastewater treatment plant(s). The responsibility of delivering drinking water to the public leaves little margin for error. With that said, ADEQ has spent years in fact-finding, research, collaboration, and design of the AWP program, committed to the mission of protecting human health and the environment. The outcome of ADEQ's efforts is this proposed regulatory program which sets strict minimum requirements, incumbent upon permittees, many of which have significant costs attached thereto. ADEQ believes the costs charged in supporting the program and incurred by permittees in complying with the program, put the least amount of burden on the stakeholders necessary to achieve ADEQ's preeminent goals for program safety and protectiveness.

The primary stakeholders affected by this rulemaking include State and local government agencies, water provider agencies, and water customers. The majority of the programmatic costs will be borne by water provider agencies that elect to implement AWP. These costs include implementation costs, such as capital costs for AWTF construction and system integration, and permitting, operational, monitoring, and compliance costs, among others.

There is no anticipated significant and/or disproportionate impact on small businesses. AWP is a voluntary program that provides each participating water provider agency with new opportunities for increasing and improving local water supplies, enabling individual water provider agencies to determine whether AWP is a benefit to its customers. Therefore, there has been no identification of small businesses that would be significantly impacted by the rulemaking at this time. Furthermore, any impact is not expected to be disproportionate as the rule makes no differentiation between a water provider agency's responsibility to a small business versus another customer.

ADEQ anticipates indirect impacts to water customers as a result of the rulemaking. Only water customers of participating water provider agencies are expected to be impacted by the rulemaking. These customers may expect higher water rates once water provider agencies pass on AWP costs related to AWTF development and operations. ADEQ anticipates that water provider agencies will select water supply alternatives that are most cost-effective and which best meet the needs of their customers who benefit, overall, from greater water reliability and confidence in their water provider agency's ability to meet current and future demand.

Arizona's AWP program follows a fee-for-service model, deriving funding from a number of sources including hourly review rates for the AWP permit application and related components as well as annual fees. These proposed fees were published as a draft rule for review and comment by AWP stakeholders in the summer of 2024. While ADEQ is concerned with setting fees that least burden stakeholders, the Department is also tasked with projecting an annual revenue that collects enough funds to cover annual costs to administer and enforce the program. At this time, ADEQ believes the estimated costs proposed in this collective rulemaking for the AWP program are commensurate with the actual costs necessary to support the program.

10. The agency's contact person who can answer questions about the economic, small business and consumer impact statement:

Name: Jon Rezabek
Natalie Kilker
Title: Legal Specialists
Division: Water Quality
Address: Arizona Department of Environmental Quality
1110 W. Washington Ave.
Phoenix, AZ 85007
Telephone: (602) 771-8219
(602) 771-0358
Fax: (602) 771-2366
Email: reuserulemaking@azdeq.gov
Website: https://www.azdeq.gov/awp-rulemaking

11. The time, place, and nature of the proceedings to make, amend, repeal, or renumber the rule, or if no proceeding is scheduled, where, when, and how persons may request an oral proceeding on the proposed rule:

The public comment period for this rulemaking will take place between November 1st, 2024 through December 2nd, 2024. The public comment period will close on December 2nd, 2024. Please submit comments on the rule in this *Notice of Proposed Rulemaking* (NPRM) at any time during the public comment period via the AWP-NPRM comment portal found at https://www.azdeq.gov/awp-rulemaking. Comments may also be submitted via email at reuserulemaking@azdeq.gov or via mail at the following physical address:

ADEQ
Attn: Ophelia Begay

Cube 6190C

Groundwater Section

Water Quality Division

1110 W. Washington St.

Phoenix, AZ 85007

ADEQ will be holding a public hearing for the purpose of taking oral comments on the record. All interested parties may attend. The public hearing will be held virtually. The access information is below:

Date: December 2nd, 2024

Time: 9:00 AM MST

Location: GoToWebinar hosted by Arizona Department of Environmental Quality at:

https://attendee.gotowebinar.com/register/3022851476831941722

You may also call in and listen to the meeting using your phone, but please note that phone-only access does NOT provide the option for the participant to speak.

PHONE: 562-247-8422

Access Code: 147-274-116

Listen only; no ability to comment

Nature: Public hearing on the proposed rules.

ADEQ will take reasonable measures to provide access to department services to individuals with limited ability to speak, write or understand English and to those with disabilities. Requests for language translation, ASL interpretation, CART captioning services or disability accommodations must be made at least 48 hours in advance by contacting the Title VI Nondiscrimination Coordinator, Leonard Drago, at 602-771-2288 or Drago.Leonard@azdeq.gov. For a TTY or other device, Telecommunications Relay Services are available by calling 711.

12. All agencies shall list other matters prescribed by statute applicable to the specific agency or to any specific rule or class of rules. Additionally, an agency subject to Council review under A.R.S. §§ 41-1052 and 41-1055 shall respond to the following questions:

There are no other matters prescribed by statute applicable specifically to ADEQ or this specific rulemaking.

a. Whether the rule requires a permit, whether a general permit is used and if not, the reasons why a general permit is not used:

Yes, this rulemaking proposes to establish the Advanced Water Purification regulatory program, which includes issuing individual permits, pursuant to A.R.S. § 49-211. While the product (advanced treated water or finished water) of an Advanced Water Purification regulatory program facility is substantially the same, the facilities, activities and practices regulated by the program will be substantially different in nature due to the treated wastewater source, a multitude of viable technological process configurations, a swift pace of technological progress in the field and the custom nature of the regulated parties and their circumstances. Moreover, general permits are not "technically feasible" for the Advanced Water Purification regulatory program under A.R.S. § 41-1037(A)(3), and not used in the program.

b. Whether a federal law is applicable to the subject of the rule, whether the rule is more stringent than federal law and if so, citation to the statutory authority to exceed the requirements of federal law:

While the Safe Drinking Water Act (SDWA) (40 USC § 300f *et seq.*) does regulate the treatment and delivery of drinking water from public water systems across the United States, it does not explicitly regulate the treatment of "treated wastewater" (*see* proposed rule R18-9-A801) as a source, which is the subject of this proposed rule. In fact, SDWA only contemplates surface and ground water as sources for public water systems. Some Advanced Water Purification facilities will be considered public water systems for the purposes of the SDWA and regulated in accordance with the SDWA in addition to the proposed AWP program.

c. Whether a person submitted an analysis to the agency that compares the rule's impact of the competitiveness of business in this state to the impact on business in other states:

Not applicable.

13. A list of any incorporated by reference material as specified in A.R.S. § 41-1028 and its location in the rules:

"Method 5710B"	R18-9-A802(B)(1); R18-9-F834(C)(2)(b)(v)
"Method 5710C"	R18-9-A802(B)(2); R18-9-F834(C)(2)(a) & (b)
"Analytical and Data Quality Systems"	R18-9-A802(B)(3); R18-9-A802(C)(1)
"Quality System"	R18-9-A802(B)(4); R18-9-A802(C)(2)
"Quality Assurance and Quality Control in Laboratory Toxicity Tests"	R18-9-A802(B)(5); R18-9-A802(C)(3)

"Quality Assurance/Quality Control"	R18-9-A802(B)(6); R18-9-A802(C)(4)
"Standard Test Methods for Operating Characteristics of Reverse Osmosis and Nanofiltration Devices"	R18-9-A802(B)(7); R18-9-F832(C)(4)
"Contaminant Candidate List 5 - Exhibit 1b - Unregulated DBPs in the DBP Group on CCL 5"	R18-9-A802(B)(8); R18-9-F834(C)(2)(c)(i) & (ii)
"2018 Edition of the Drinking Water Standards and Health Advisories"	R18-9-A802(B)(9); R18-9-E826(D)(4), (5), (6) & (7); R18-9-F834(C)(2)(c)(ii)
"Primary Drinking Water Standards"	R18-9-A802(B)(10); R18-9-E835
"Method 1623.1: Cryptosporidium and Giardia in Water by Filtration/IMS/FA"	R18-9-A802(B)(11); R18-9-E828(C)(9)
"Method 1615: Measurement of Enterovirus and Norovirus Occurrence in Water by Culture and RT-qPCR"	R18-9-A802(B)(12); R18-9-E828(C)(9)
"Characteristic of ignitability"	R18-9-A802(B)(13); R18-9-E824(B)(13)(a)
"Considerations for Direct Potable Reuse Downstream of the Groundwater Recharge Advanced Water Treatment Facility"	R18-9-A802(B)(14); R18-9-F832(D)(4)(b)(viii)

14. The full text of the rules follows:

Rule text begins on the next page.

TITLE 18. DEPARTMENT OF ENVIRONMENTAL QUALITY

CHAPTER 9. DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER POLLUTION CONTROL

ARTICLE 2. AQUIFER PROTECTION PERMITS - INDIVIDUAL PERMITS

PART B. BADCT FOR SEWAGE TREATMENT FACILITIES

Section

R18-9-B201. General Considerations and Prohibitions

ARTICLE 7. USE OF RECYCLED WATER

PART A. GENERAL PROVISIONS

Section

R18-9-A701. Definitions

PART B. RECLAIMED WATER

Section

R18-9-B702. General Requirements for Reclaimed Water

PART E. PURIFIED WATER FOR POTABLE USE

Section

R18-9-E701. Applicability of Advanced Water Purification Program

ARTICLE 8. ADVANCED WATER PURIFICATION

PART A. GENERAL PROVISIONS

Section

PART B. GENERAL PROGRAM REQUIREMENTS

PART C. PRE-PERMIT AND PERMIT REQUIREMENTS

PART D. GENERAL PERMIT REQUIREMENTS

PART E. CONSTITUENT CONTROL, MONITORING, AND REPORTING

PART F. TECHNICAL AND OPERATIONAL REQUIREMENTS

ARTICLE 2. AQUIFER PROTECTION PERMITS - INDIVIDUAL PERMITS

PART B. BADCT FOR SEWAGE TREATMENT FACILITIES

Section

A. No change

B. No change

C. No change

D. No change

E. A person shall not create or maintain a connection between any part of a sewage treatment facility and a potable water supply so that sewage or wastewater contaminates a potable or public water supply. A person may only create and maintain a connection between sewage treatment facilities, advanced water treatment facilities, and a potable water supply under an Advanced Water Purification permit issued pursuant to Article 8 of this Chapter.

F. No change

G. No change

H. No change

I. No change

J. No change

ARTICLE 7. USE OF RECYCLED WATER

PART A. GENERAL PROVISIONS

Section

R18-9-A701. Definitions

~~1.~~ ~~"Advanced reclaimed water treatment facility" means a facility that treats and purifies Class A+ or Class B+ reclaimed water to produce potable water suitable for distribution for human consumption. R18-9-B702(B) does not apply to an advanced reclaimed water treatment facility. Potable water produced by an advanced reclaimed water treatment facility is not reclaimed water.~~

~~2~~1. "Direct reuse" means the beneficial use of reclaimed water for a purpose allowed by this Article. The following is not a direct reuse of reclaimed water:

a. The use of water subsequent to its discharge under the conditions of a National or Arizona Pollutant Discharge Elimination System permit;

b. The use of water subsequent to discharge under the conditions of an Aquifer Protection Permit issued under 18 A.A.C. 9, Articles 1 through 3;

c. The use of industrial wastewater, reclaimed water, or both, in a workplace subject to a federal program that protects workers from workplace exposures~~; or~~

~~d. The use of potable water produced by an advanced reclaimed water treatment facility~~.

~~3~~2. "Direct reuse site" means an area permitted for the application or impoundment of reclaimed water. An impoundment operated for disposal under an Aquifer Protection Permit is not a direct reuse site.

4~~3~~. "End user" means a person who directly reuses reclaimed water meeting the standards for Classes A+, A, B+, B, and C, established under 18 A.A.C. 11, Article 3.

~~5~~4. "Gray water" means wastewater that has been collected separately from a sewage flow and that originates from a clothes washer or a bathroom tub, shower or sink but that does not include wastewater from a kitchen sink, dishwasher or toilet. A.R.S. § 49-201(18).

~~6~~5. "Industrial wastewater" means wastewater generated from an industrial process.

~~7~~6. "Irrigation" means the beneficial use of water or reclaimed water, or both, for growing crops, turf, or silviculture, or for landscaping.

~~8~~7. "Open access" means access to reclaimed water by the general public is uncontrolled.

~~9~~8. "Open water conveyance" means any constructed open waterway, including canals and laterals, that transports reclaimed water from a sewage treatment facility to a reclaimed water blending facility or from a sewage treatment facility or reclaimed water blending facility to the point of land application or end use. An open water conveyance does not include waters of the United States.

~~10~~9. "Pipeline conveyance" means any system of pipelines that transports reclaimed water from a sewage treatment facility to a reclaimed water blending facility or from a sewage treatment facility or reclaimed water blending facility to the point of land application or end use.

~~11~~10."Reclaimed water" means water that has been treated or processed by a wastewater treatment plant or an on-site wastewater treatment facility. A.R.S. § 49-201(32).

~~12~~11."Reclaimed water agent" means a person who holds a permit to distribute reclaimed water to more than one end user.

~~13~~12."Reclaimed water blending facility" means an installation or method of operation that receives reclaimed water from a sewage treatment facility or other reclaimed water blending facility classified to produce Class C or better reclaimed water and blends it with other water so that the produced water may be used for a higher-class purpose listed in 18 A.A.C. 11, Article 3, Table A.

~~14~~13."Recycled water" means a processed water that originated as a waste or discarded water, including reclaimed water and gray water, for which the Department has designated water quality specifications to allow the water to be used as a supply.

~~15~~14."Restricted access" means that access to reclaimed water by the general public is controlled.

~~16~~15."Sewage Treatment Facility" means a sewage treatment facility as defined in 18 A.A.C. 9, Article 1.

PART B. RECLAIMED WATER

Section

R18-9-B702. General Requirements for Reclaimed Water

A. No Change.

B. No Change.

C. No Change.

D. No Change.

E. No Change.

F. No Change.

G. No Change.

H. Prohibited activities.

1. Irrigating with untreated sewage;
2. Providing water for human consumption from a reclaimed water source ~~except as allowed in Part E of this Article~~, except as permitted under Article 8 of this Chapter.
3. Providing or using reclaimed water for any of the following activities:
   a. Direct reuse for swimming, wind surfing, water skiing, or other full-immersion water activity with a potential of ingestion; or
   b. Direct reuse for evaporative cooling or misting.
4. Misapplying reclaimed water for any of the following reasons:
   a. Application of a stated class of reclaimed water of lesser quality than allowed by this Article for the type of direct reuse application;
   b. Application of reclaimed water to any area other than a direct reuse site; or
   c. Allowing runoff of reclaimed water or reclaimed water mixed with stormwater from a direct reuse site, except for:
      i. ~~agricultural~~ Agricultural return flow directed onto an adjacent field or returned to an open water conveyance; or
      ii. ~~a~~ A discharge authorized by an individual or general NPDES or AZPDES permit.

I. No Change.

J. No Change.

K. No Change.

~~PART E. PURIFIED WATER FOR POTABLE USE~~

Section

~~**R18-9-E701. Recycled Water Individual Permit For An Advanced Reclaimed Water Treatment Facility**~~

~~**A.** An application for a Recycled Water Individual Permit for an Advanced Reclaimed Water Treatment Facility must be submitted to the Department according to the requirements in R18-9-A703, as applicable.~~

~~**B.** Safe Drinking Water Act. For purposes of Safe Drinking Water Act requirements, water produced by an Advanced Reclaimed Water Treatment Facility shall be considered surface water for purposes of compliance with Title 18, Chapter 4 of the Arizona Administrative Code. Nothing in this Section exempts an applicable facility from Safe Drinking Water Act requirements.~~

~~**C.** Design Report. In addition to the information required by subsection (A), the applicant shall submit a design report for the Advanced Reclaimed Water Treatment Facility according to a form prescribed by the Department and certified by an Arizona-registered professional engineer. The design report must include the following information:~~

~~1. Characterization of source water quantity and quality, including:~~

~~a. Average and anticipated minimum and maximum source water flows to the facility;~~

~~b. Concentrations of the source water's physical, microbiological, and chemical constituents regulated for drinking water Maximum Contaminant Levels under the Safe Drinking Water Act and which the Department determines are appropriate for the particular facility and source water;~~

~~c. Description and concentrations of constituents in the source water used for unit treatment process monitoring and assessment of unit treatment process efficacy, and~~

~~d. A list of unregulated microbial and chemical constituents and corresponding concentrations in the source water a facility proposes to monitor in order to assess the treatment effectiveness of the overall treatment train. The particular constituents will depend on consideration of factors, such as:~~

~~i. Occurrence of the constituent in source and local waters,~~

~~ii. Availability of standardized laboratory methods for quantification of the constituent,~~

~~iii. Usefulness as representatives of or surrogates for larger classes of constituents, and~~

~~iv. Availability of toxicity data for the constituent.~~

2. ~~Description of, and results from, the pilot water treatment system for the facility or of analogous systems where comparable treatment components are demonstrated as appropriate for treating the particular characteristics of the applicant's proposed source water;~~
3. ~~Identification and description of the technologies, processes, methodologies, and process control monitoring to be employed for microbial control;~~
4. ~~Logarithmic reduction targets for microbial control, to ensure the product water is free of pathogens and suitable for potable use;~~
5. ~~Identification and description of technologies, processes, methodologies and process control monitoring for chemical control;~~
6. ~~Plan for monitoring the product water for public health protection;~~
7. ~~Commissioning and startup plan, including preoperational and startup testing and monitoring, expected timeframe for meeting full operational performance, and any other special startup condition meriting consideration in the individual permit;~~
8. ~~Operation and maintenance plan including corrective actions for out-of-range monitoring results and contingencies for non-compliant water;~~
9. ~~Operator training plan; and~~
10. ~~Documentation of technical, financial, and management capability.~~

ARTICLE 8. ADVANCED WATER PURIFICATION

PART A. GENERAL PROVISIONS

R18-9-A801. Definitions

In addition to the definitions in A.R.S. § 49-201, the following terms apply to this Article:

1. "Action level" means a value or criterion established in an Advanced Water Purification (AWP) permit at a critical control point that, when exceeded, triggers a required response or action to prevent a potentially hazardous event and will involve actions or responses such as additional monitoring, treatment adjustments, public notification or other corrective responses or actions.
2. "Acute exposure threats" means the increased imminent risk of adverse health effects, including infectious diseases and toxic effects from short-term exposures to contaminants in water which triggers public notice pursuant to A.A.C. R18-4-119, which incorporates 40 CFR §141.201 by reference.
3. "ADEQ" or "Department" means Arizona Department of Environmental Quality.

4. "Advanced Oxidation Process" or "AOP" means a set of chemical treatment processes whereby oxidation of organic contaminants occurs on a molecular level through reactions with hydroxyl radicals or similarly aggressive radical oxidant species.
5. "Advanced treated water" means water produced by an advanced water treatment facility (AWTF) and can be from one or more AWTFs.
6. "Advanced Water Purification" or "AWP" means the treatment or processing of treated wastewater to advanced treated water standards for the purpose of delivery to a drinking water treatment facility or a drinking water distribution system.
7. "Advanced Water Purification Responsible Agency" or "AWPRA" means the applicant or permittee, comprising one or more AWPRA Partners, responsible for compliance with the requirements of the AWP program for a particular AWP project and formed pursuant to R18-9-B805. An AWPRA must be a "person" under A.R.S. § 49-201(33).
8. "Advanced Water Purification Responsible Agency Partner" or "AWPRA Partner" means any entity that collects or provides treated wastewater to the AWP project, performs wastewater source control or treatment pursuant to this Article, or utilizes AWP project water as a source for delivery to a drinking water distribution system.
9. "Advanced Water Purification project" or "AWP project" means all facilities related to the advanced treatment of treated wastewater to drinking water standards operating under an AWP permit or demonstration permit.
10. "AWP project treatment train" means a treatment train designed to meet the requirements contained in this Article. In addition to the advanced water treatment facility (AWTF), portions of the water reclamation facility or drinking water treatment facility can be part of an AWP project treatment train.
11. "AWPRA facility" or "facility" means a drinking water treatment facility, advanced water treatment facility (AWTF), collection system, or wastewater treatment plant involved in the production of advanced treated water or finished water under this Article.
12. "Advanced Water Treatment Facility" or "AWTF" means a facility where treated wastewater is treated pursuant to the requirements of this article.
13. "Alert level" means a value or criterion established in an AWP permit at a critical control point that, when exceeded, alerts an operator that a potential problem may require a response.
14. "Amendment" means a change to the permit language resulting from a modification event.
15. "Aquifer Protection Permit" or "APP" means an individual permit or a general permit issued under A.R.S. §§ 49-203, 49-241 through 49-252, and Articles 1, 2, and 3 of this Chapter.
16. "AWP" means Advanced Water Purification (*See* R18-9-A801(6)).

17. "Barrier" means a measure (technical, operational or managerial) implemented to control microbial or chemical constituents in advanced treated water.

18. "Best Management Practices" or "Best Practices" means a set of principles, guidelines and standards that an AWPRA follows to ensure high levels of quality, safety, efficiency and reliability. The principles, guidelines and standards in an AWP guidance document constitute Best Management Practice or Best Practice.

19. "Bioassay" means tests performed using live cell cultures or mixtures of cellular components in which the potency of a chemical or water concentrate is tested based on its effect on a measurable constituent, such as inhibition or the induction of a response (including carcinogenicity and mutagenicity). Bioassays can be used to measure synergistic, additive, and antagonistic interactions between compounds that may be present in a mixture.

20. "Blending" means the mixing of advanced treated water with another water source that will result in raw water augmentation or treated water augmentation directly to the distribution system. Blending does not apply to an Engineered Storage Buffer where storage of only advanced treated water takes place.

21. "Challenge test" means a study comparing a pathogen, surrogate parameter, or indicator compound concentration between the influent and effluent of a treatment process to determine the removal capacity of the treatment process. The concentration in the influent must be high enough to ensure that a measurable concentration is detected in the effluent (i.e., filtrate detection limit).

22. "Chemical" means any substance, used in or produced by a reaction involving changes to atoms or molecules, that has a defined composition and which is either naturally occurring or manufactured.

23. "Chemical peak" means an abnormal increase in the level of a chemical that represents a potential human health hazard that is the result of intentional or unintentional illicit discharges of chemicals to the sewershed. Chemical peaks are different from normal facility variation in water quality.

24. "Compliance schedule" means a list of required items assigned by the Department to the Permittee to be completed in the AWP permit.

25. "Constituent of Concern" means a potentially harmful or difficult to treat substance that could cause treatment interference, pass-through, or a violation of a treatment technique requirement, action level or Maximum Contaminant Level in the advanced treated water or finished water. Constituents of concern include target chemicals in Tiers 1, 2, and 3.

26. "Constituent" means any physical, chemical, biological, or radiological substance or matter found in water and/or wastewater.

27. “Continuous online analyzers” means a monitoring sensor or device that monitors continuously or in real time (intervals of 15 minutes or less) and is positioned directly in the process flow or sample line to measure treatment performance.
28. “Critical Control Point” means a point in the treatment train that is specifically designed to reduce, prevent, or eliminate process failure, and for which controls exist to ensure the proper performance of that process, verified via monitoring.
29. “Demonstration permit” means an AWP permit that does not include distribution of finished water to drinking water consumers.
30. “Department” means the Arizona Department of Environmental Quality.
31. “Direct integrity test” means a physical test applied to a membrane unit in order to identify and isolate integrity breaches, such as leaks that could result in contamination of the filtrate.
32. “Director” means the Director of the Arizona Department of Environmental Quality.
33. “Disinfection treatment process” means a treatment process that either physically or chemically eliminates or inactivates pathogenic microorganisms.
34. “Distribution” means the act of delivering finished water through a network of pipes or other constructed conveyances from a facility to a consumer for human consumption.
35. "Distribution system" means the infrastructure used to carry out distribution.
36. “Draft permit” means a preliminary draft of a permit upon which the Director has not yet made a final permit determination.
37. “Drinking Water Treatment Facility” means a water treatment facility that is designed and operated to meet the requirements of the Safe Drinking Water Act.
38. “Engineered Storage Buffer” means a storage facility used to provide retention time before advanced treated water is introduced into a drinking water treatment facility or distribution system.
39. “Enhanced Source Control” means a program that enables the AWPRA to prevent constituents of concern, including target chemicals, from negatively impacting the AWTF, or the water it produces, by controlling them at their source.
40. “Exceedance” means an increase in the concentration of a constituent of concern beyond an established level such as an MCL, alert level or action level.
41. “Excursion” means a deviation from established water quality boundaries for a process or at any point in a treatment train.
42. “Failure” means a condition in which an excursion or loss of performance occurs in one or more of the unit processes that results in a treatment train to not meet a performance metric or deviate from an approved operational range for parameters, necessitating a shutdown of a specific train or the entire plant for compliance.

43. "Failure Response Time" means the maximum possible time from when a failure occurs in the treatment system to when the quality of the final product water is no longer affected by the failure. Failure response time is calculated as a sum of the sampling interval, sample turnaround time and system reaction time, with overall failure response time based on the treatment process with the highest individual failure response time.
44. "Filtration treatment process" means a treatment process that physically separates a constituent of concern from water.
45. "Finished water" or "finished drinking water" means water produced by an AWTF, or a drinking water treatment facility, and which is introduced into a distribution system or served for human consumption without additional treatment, except for measures required to uphold water quality within the distribution system.
46. "Full scale" means the complete implementation and operation of an AWP system that is designed to treat treated wastewater to advanced treated water or finished water standards and to meet the finished water demand of the community.
47. "Good engineering practice" means a set of principles, guidelines and standards that engineers follow to ensure their work meets high levels of quality, safety, efficiency and reliability. The principles, guidelines and standards in an ADEQ-issued AWP guidance document constitute good engineering practice.
48. "Health Advisory" or "HA" means an estimate of acceptable levels for a chemical substance in drinking water based on health effects information that is:
    a. Published by EPA;
    b. Established in credible peer-reviewed literature or state or Federal databases;
    c. Established by the Department; or
    d. Established by another state's drinking water program as a "notification level".
49. "Impactful non-domestic dischargers" means a non-domestic discharger that has been determined by the AWPRA to discharge in such a way that will or does significantly impact the AWPRA's treatment processes and may or does significantly impact public health. Such determinations are made through a significant impact analysis pursuant to R18-9-E824(C).
50. "Indicator compound" or "Indicator" or "Performance Based Indicator" means a chemical found in treated wastewater that serves as a representative substance for a particular group of trace organic compounds, embodying their physical, chemical, and biodegradation properties.
51. "Initial Source Water Characterization" or "ISWC" means baseline monitoring of chemicals and pathogens performed on the treated wastewater effluent of a Water Reclamation Facility pursuant to R18-9-C814.
52. "Interference" means a discharge which alone, or in conjunction with a discharge or discharges from other sources, both:

a. inhibits or disrupts the Water Reclamation Facility or the Advanced Water Treatment Facility, and

b. is the cause of a violation of any requirement of the AWP permit.

53. "Local limit" means a set of specific, local, relevant, and enforceable limits, control measures, and best management practices established to protect AWPRA Facilities from pass-through or interference that could result in a threat to public health.

54. "Log reduction value" means the measure of a treatment train's or a treatment process's ability to remove or inactivate microorganisms such as bacteria, protozoa and viruses. A log reduction value is the log reduction validated or credited for a treatment process or treatment train.

55. "Log reduction" means the logarithm base 10 of the ratio of the levels of a pathogenic organism or other contaminant before and after treatment or a reduction in the concentration of a contaminant or microorganism by a factor of 10. One log reduction corresponds to a 90-percent reduction from the original concentration.

56. "Maximum Contaminant Level" or "MCL" has the same meaning set forth in Title 18, Chapter 4, Article 1 of this Title.

57. "Modification" means a change or changes to the treatment train or operations or any other component that will result in a change in the water quality of any process, unit of operation or to the advanced treated water or finished water.

58. "Municipal wastewater" means wastewater that contains predominantly domestic waste and may include commercial and industrial waste.

59. "Non-domestic sources" means both industrial and commercial sources.

60. "National Pretreatment Program" or "NPP" means the federal program referred to by this name under the Clean Water Act that is meant to protect infrastructure and receiving waters to a fishable and swimmable standard. The NPP is designed to reduce conventional and toxic pollutant levels discharged by industries and other nondomestic wastewater sources into municipal sewer systems and into the environment. The National Pretreatment Program's implementing regulations are found at Title 40 of the Code of Federal Regulations, Parts 122, 123, 124, and 403 and chapter I, subchapter N.

61. "National Pretreatment Program AWPRA" or "NPP AWPRA" means an AWPRA subject to R18-9-C813(B).

62. "Non-National Pretreatment Program AWPRA" or "Non-NPP AWPRA" means an AWPRA subject to R18-9-C813(C).

63. "Off-specification water" or "off-spec water" means water that has a quality that does not meet standards such as drinking water MCLs or other AWP programmatic requirements such as standards associated with surrogates or indicators.

64. "Operational barrier" means a barrier in the form of measures, including operations and monitoring plans, failure and response plans, as well as operator training and certification.

65. "Operational parameter" means a measurable property used to characterize or partially characterize the operation of a treatment process and must confirm the treatment barriers are intact to ensure the process is meeting the water quality and pathogen/chemical removal goals.
66. "Original drinking water" means drinking water that was being distributed prior to the introduction of advanced treated water or finished water.
67. "Oxidized wastewater" means wastewater that is treated to a level beyond simple removal of floating and suspended solids and meets the secondary treatment levels as described in R18-9-B204(B)(1).
68. "Ozone with biologically active filtration" or "Ozone/BAC" means an ozonation process immediately followed by biologically activated carbon.
69. "Pass-through" means the occurrence of a constituent of concern exiting Water Reclamation Facilities or Advanced Water Treatment Facilities in quantities or concentrations that have a significant potential to have serious adverse public health effects or to cause a violation of a treatment technique requirement, an action level or an MCL in the advanced treated water or finished water.
70. "Pathogen" means a microorganism such as bacteria, virus, or protozoa that can cause human illness.
71. "Pilot Study" or "Pilot train" or "Pilot" means a preliminary study and treatment train, of any scale representative to the full-scale facility, which is conducted to evaluate the feasibility, duration, cost, adverse events, and to improve upon the study design prior to performance of a full-scale project.
72. "Potentially impactful non-domestic discharger" means a non-domestic discharger that has been determined by the AWPRA to pose a potential to adversely impact treatment processes or the public health or which otherwise must be identified and tracked by the AWPRA pursuant to R18-9-E824(B)(4).
73. "Product water" means water exiting a specific treatment process or a combination of treatment processes.
74. "Public water system" has the same definition as the one incorporated by reference at A.A.C. R18-4-103 (40 CFR 141.2).
75. "Quantitative Polymerase Chain Reaction" or "qPCR" means a PCR-based technique that couples amplification of a target DNA sequence with quantification of the concentration of that DNA species in the reaction.
76. "Raw wastewater" means wastewater that is entering a Water Reclamation Facility via a sewage collection system and which has not undergone any treatment. For the purposes of pathogen log removal, raw wastewater means wastewater prior to any point in a wastewater treatment process that may be credited for disinfection.
77. "Raw water augmentation" means introducing advanced treated water into the raw water supply upstream of a drinking water treatment facility.

78. "Real time monitoring" or "online monitoring" means treatment performance monitoring using instruments directly in the process flow or sample line that occurs continuously or semi-continuously in intervals of 15 minutes or less.

79. "Recalcitrant Total Organic Carbon" or "rTOC" means the Total Organic Carbon (TOC) found in finished water, which once used or consumed becomes wastewater. rTOC is unlike anthropogenic TOC present in wastewater because it may not be effectively eliminated by the Water Reclamation Facility, which leaves it as a constituent of the TOC in the treated wastewater.

80. "Redundancy" means the use of multiple treatment barriers to attenuate the same type of constituent, so that if one barrier fails, performs inadequately, or is taken offline for maintenance, the overall system will still perform effectively, reducing risk.

81. "Reference Dose" or "RfD" means an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime.

82. "Reference pathogens" means Enteric viruses (specifically norovirus), Giardia lamblia cysts, and Cryptosporidium oocysts.

83. "Reliability" means the ability of a treatment process or treatment train to consistently achieve the desired degree of treatment, based on its inherent redundancy, robustness, and resilience.

84. "Resilience" means the ability of a treatment train to adapt successfully and restore performance rapidly when failure occurs.

85. "Robustness" means the ability of an AWP system to address a broad variety of constituents and changes in the concentrations of the constituents in the source water and resist a failure.

86. "Safe Drinking Water Act" means the Safe Drinking Water Act (Pub. L. 93-523, as amended; 42 U.S.C. 300f et seq.).

87. "SCADA" or "SCADA System" means Supervisory Control and Data Acquisition system.

88. "Secondary treatment" means treated wastewater that meets the following treatment levels:

    a. Five-day biochemical oxygen demand (BOD5) less than 30 mg/l (30-day average) and 45 mg/l (seven-day average), or carbonaceous biochemical oxygen demand (CBOD5) less than 25 mg/l (30-day average) or 40 mg/l (seven-day average);

    b. Total suspended solids (TSS) less than 30 mg/l (30-day average) and 45 mg/l (seven-day average);

    c. pH maintained between 6.0 and 9.0 standard units; and

    d. A removal efficiency of 85 percent for BOD5, CBOD5, and TSS.

89. "Source water" means water that is characterized for chemical constituents and pathogens based on which treatment or source control is designed.

90. "Surrogate parameter" or "Surrogate" means a measurable chemical or physical property, microorganism, or chemical that has been demonstrated to provide a direct correlation with the concentration of an indicator compound or pathogen; that may be used to monitor the efficacy of constituent reduction by a treatment process; and/or that provides an indication of a treatment process failure.

91. "Target chemical" means any unregulated chemical causing a potential human health concern that may be present in the treated wastewater.

92. "Tier 1 chemicals" means contaminants regulated as Primary Drinking Water Maximum Contaminant Levels (MCLs) under 40 CFR Part 141 of the Safe Drinking Water Act, including MCLs and treatment techniques.

93. "Tier 2 chemicals" means AWP-specific contaminants pursuant to R18-9-E826 that are not regulated in the Safe Drinking Water Act, but may be present in treated wastewater and may pose human health concerns.

94. "Tier 3 chemicals" means Performance Based Indicators that are used to monitor the performance of AWP treatment trains.

95. "Total Organic Carbon" or "TOC" means the amount of organic carbon in a sample.

96. "Trace Organic Compounds" or "TOrCs" means a category of compounds such as pharmaceuticals, personal care products, and hormones.

97. "Treated wastewater" means any water or wastewater source of predominantly municipal origin coming from a Water Reclamation Facility and going to an Advanced Water Treatment Facility that has undergone treated wastewater characterization for either enhanced wastewater treatment or secondary wastewater treatment. For the purposes of the AWP program, treated wastewater originates from a Water Reclamation Facility that has liquid stream treatment processes that, at a minimum, are designed and operated to produce oxidized wastewater that achieves a defined source water quality for the purpose of additional treatment by an Advanced Water Treatment Facility.

98. "Treated water augmentation" means finished drinking water from an AWTF, permitted as a drinking water treatment facility, which is directly introduced into a distribution system for human consumption.

99. "Treatment barrier" means a barrier in constant operation, such as a physical barrier, that can be credited with treatment performance.

100. "Treatment interference" or "interference" means a discharge from a non-domestic source which, alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the AWPRA's treatment processes or operations and has significant potential for adverse public health consequences or significant potential to cause a violation of an action level, treatment technique or an MCL in advanced treated water or finished water.
101. "Treatment mechanism" means a physical, chemical, or biological action within each treatment process that reduces the concentration of a pathogen or a chemical contaminant.
102. "Treatment process" means a sequence of physical, chemical, or biological procedures applied to municipal wastewater or treated wastewater to remove pathogens and/or chemical constituents.
103. "Treatment technique" means a required process intended to reduce the level of a contaminant in water and/or drinking water.
104. "Treatment train" means a grouping of physical, chemical, and biological treatment technologies or processes that conditions or treats water to achieve a specific water quality goal.
105. "Upset" means unintentional and temporary noncompliance with a performance metric resulting in an excursion or loss of performance in one or more of the unit processes.
106. "Water Reclamation Facility" or "Wastewater Treatment Plant" means an arrangement of devices and structures for collecting, treating, neutralizing, stabilizing, or disposing of domestic wastewater, industrial wastes, and biosolids. For the purposes of the AWP program, a wastewater treatment plant does not include industrial wastewater treatment plants or complexes whose primary function is the treatment of industrial wastes.
107. "10^{-4} cancer risk" means the concentration of a chemical in drinking water corresponding to an excess estimated lifetime cancer risk of 1 in 10,000.

R18-9-A802. Program Review; Incorporation by Reference; Quality Assurance/Quality Control Methodologies

A. The Department shall review the AWP program upon any significant update to the incorporated by reference material in the rule, any significant update to the health advisory values established by the Department, any emerging scientific developments impacting AWP treatment mechanisms, or otherwise at the Director's discretion.

1. During its review, the Department shall assess the program rules and components for adequacy against currently available data and best available science.
2. As a result of its review, the Department shall determine whether any rule should be amended or repealed, and whether any material incorporated by reference should be updated.

B. The following materials are incorporated by reference and applicable in this Article unless specifically stated otherwise. The materials include no future editions or amendments, and are on file with the Department and as indicated below:

1. Standard Methods for the Examination of Water and Wastewater, Section 5710 B, "Trihalomethane Formation Potential (THMFP)", 24th ed. 2023, available at https://www.standardmethods.org.
2. Standard Methods for the Examination of Water and Wastewater, Section 5710 C, "Simulated Distribution System Trihalomethanes (SDS-THM)", 24th ed. 2023, available at https://www.standardmethods.org.
3. Standard Methods for the Examination of Water and Wastewater, Part 1000, "Analytical and Data Quality Systems", 24th ed. 2023, available at https://www.standardmethods.org.
4. Standard Methods for the Examination of Water and Wastewater, Section 7020, "Quality System", 24th ed. 2023, available at https://www.standardmethods.org.
5. Standard Methods for the Examination of Water and Wastewater, Section 8020, "Quality Assurance and Quality Control in Laboratory Toxicity Tests", 24th ed. 2023, available at https://www.standardmethods.org.
6. Standard Methods for the Examination of Water and Wastewater, Section 9020, "Quality Assurance/Quality Control", 24th ed. 2023, available at https://www.standardmethods.org.
7. ASTM International, Designation D4194-23, "Standard Test Methods for Operating Characteristics of Reverse Osmosis and Nanofiltration Devices", February 16, 2023, available at https://www.astm.org.
8. Federal Register, 87 FR 68066, "Contaminant Candidate List 5 - Exhibit 1b - Unregulated DBPs in the DBP Group on CCL 5", available at https://www.federalregister.gov.
9. 2018 Edition of the Drinking Water Standards and Health Advisories, U.S. EPA, available at https://www.epa.gov.
10. 40 CFR Part 141, "Primary Drinking Water Standards", published July 1, 2023, available at https://www.ecfr.gov.
11. Method 1623.1: Cryptosporidium and Giardia in Water by Filtration/IMS/FA, published January 2012, available at https://www.nepis.epa.gov.
12. Method 1615: Measurement of Enterovirus and Norovirus Occurrence in Water by Culture and RT-qPCR, published 2014, available at https://cfpub.epa.gov.
13. 40 CFR 261.21, "Characteristic of ignitability, published July 7, 2020, available at https://www.ecfr.gov.
14. "Considerations for Direct Potable Reuse Downstream of the Groundwater Recharge Advanced Water Treatment Facility". Brian Pecson, Shane Trussell, Elise Chen, Anya Kaufmann, & Rhodes Trussell. (2020).

C. Data collection, analysis, sampling, monitoring, reporting, and other related data quality assurance and quality control methodologies in this Article shall be conducted in accordance with the following applicable procedures in Standard Methods for the Examination of Water and Wastewater, 24th ed. 2023, available at standardmethods.org:

1. Part 1000, “Analytical and Data Quality Systems”;
2. Section 7020, “Quality Control for Wastewater Samples”;
3. Section 8020, “Quality Assurance and Quality Control in Laboratory Toxicity Tests”; and
4. Section 9020, “Interlaboratory Quality Control Guidelines”.

R18-9-A803. Applicability of the Safe Drinking Water Act

A. For the purposes of the Safe Drinking Water Act, treated wastewater is presumptively considered surface water. Nothing in this section exempts a facility from applicable Safe Drinking Water Act requirements in Chapter 4 of this Title.

B. An AWTF that treats treated wastewater to advanced treated water standards for raw water augmentation may, at the Director’s discretion, be considered part of a public water system for the purposes of compliance with the Safe Drinking Water Act and all applicable requirements of this Title.

C. An AWTF that treats treated wastewater to finished water standards for human consumption and distribution through pipes or other constructed conveyances is, or is part of, a public water system for the purposes of compliance with the Safe Drinking Water Act and all applicable requirements of this Title.

D. If the AWTF is considered a public water system under either subsections (B) or (C):
1. Permitting processes of this Article supersede the public water system permitting requirements in Chapter 5, Article 5, where they conflict, and
2. Design requirements of this Article supersede the public water system design requirements in Chapter 5, Article 5 where they conflict.

PART B. GENERAL PROGRAM REQUIREMENTS

R18-9-B804. Advanced Water Purification Operator Certification

A. Definitions. In addition to the definitions for this Article, the following terms apply to this section:
1. “Absence” means an AWP operator in direct responsible charge that is not present onsite for a maximum of an eight-hour shift.
2. “Advanced Water Purification Responsible Agency administrator” or “AWPRA administrator” means an individual appointed or authorized to exercise managerial control over a designated AWP project.
3. “Advanced Water Purification certified operator” or “AWP operator” means an individual who has passed the AWP validated examination, meets the advanced water treatment qualifying experience requirements of this section, and holds a current certificate, issued by the Department, in either:

a. The field of drinking water treatment with at least a Grade 3 or Grade 4 drinking water treatment certification; or

b. The field of wastewater treatment with at least a Grade 3 or Grade 4 wastewater treatment certification.

4. "Advanced water treatment qualifying experience" means at least one year of hands-on experience in the operation of a minimum of three advanced water treatment processes, all within a single advanced water treatment train.

5. "AWP validated examination" means an examination that is approved by the Department after being reviewed to ensure that the examination is based on the knowledge, skills, and abilities needed to operate an AWTF.

6. "Direct responsible charge" means the person who has overall responsibility for the day-to-day, hands-on operation of an AWTF.

7. "AWPRA facility" or "facility" means a drinking water treatment facility, AWTF, collection system, or wastewater treatment plant involved in the production of advanced treated water.

8. "Onsite" means any AWPRA facility where a critical control point is operated and has been assigned treatment credits.

9. "Professional development hour" means one hour of participation in an organized educational activity related to engineering, biological or chemical sciences, a closely related technical or scientific discipline, or operations management.

10. "Qualifying experience" means experience, skill, or knowledge obtained through employment that is applicable to the technical or operational control of all or part of a facility (A.A.C. R18-5-101).

11. "Shift operator" means a person who is in direct charge of the operation of a treatment facility for a specified period of the day and must be present at the site during the duration of the shift.

B. Applicability. The rules in this subsection apply to owners and operators of AWPRA facilities in Arizona.

C. Certification Committee.

1. Upon the effective date of this rule, the Director shall establish a certification committee which may, at the Department's request, make recommendations and provide the Department with technical advice and assistance related to the AWP operator certification.

2. The AWP operator certification committee shall consist of eleven members, appointed by the Director as follows:

a. An employee of the Department who shall serve as the executive secretary and who is responsible for maintaining records of all meetings,

b. A currently employed operator with both Grade 4 water treatment certification and AWP operator certification,

c. A currently employed operator with both Grade 3 water treatment certification and AWP operator certification,

d. A currently employed operator with both Grade 4 wastewater treatment certification and AWP operator certification,

e. A currently employed operator with both Grade 3 wastewater treatment certification and AWP operator certification,

f. A currently employed wastewater collection system operator with Grade 4 certification,

g. A currently employed water distribution system operator with Grade 4 certification,

h. A faculty member teaching environmental engineering in the water or wastewater fields at an Arizona university or community college,

i. A professional engineer, registered and residing in Arizona, engaged in consulting in the field of environmental engineering,

j. An elected or appointed municipal official,

k. A representative of a wastewater treatment facility with a design flow of greater than 5 million gallons per day (MGD) and which participates in the National Pretreatment Program, and

l. A representative of a wastewater treatment facility with a design flow of less than 5 MGD, which is not a participant in the National Pretreatment Program.

3. The certification committee shall meet at least twice a year. At the first meeting of each calendar year, the certification committee shall select, from among its members, a chairperson and other officers as necessary.

4. A certification committee member shall serve a term of three years.

5. A certification committee member may be reappointed, but a member shall not serve more than three consecutive terms.

6. A meeting quorum consists of the chairperson or the chairperson's designated representative, the executive secretary or the executive secretary's designated representative, and three other members of the committee.

7. In the event of a vacancy caused by death, resignation, or removal for cause, the Director shall appoint a successor for the unexpired term.

D. General Requirements.

1. A facility owner shall ensure that at all times:

a. A facility has an on-site operator in direct responsible charge who has both a Grade 4 drinking water treatment certification and an AWP operator certification,

b. An AWP operator makes all decisions about operational process control or system integrity regarding water quality or water quantity that affects public health. An AWPRA administrator who is not an AWP operator may make a planning decision regarding water quality or water quantity if the decision is not a direct operational process control or system integrity decision that affects public health,

c. In the absence of the AWP operator in direct responsible charge, the AWP operator in charge of the AWTF is the shift operator,

d. All AWTFs shall have an AWP operator in direct responsible charge,

e. An AWTF shall be operated by AWP operators,

f. Operators in direct responsible charge and shift operators operating an AWTF must be certified as AWP operators,

g. All critical control points shall be operated by an AWP operator, and

h. The names of all current AWP operators shall be reported to the Department as a component of the Operations Plan submitted pursuant to R18-9-F836.

2. If the owner of a facility replaces an AWP operator in direct responsible charge with another AWP operator, the facility owner shall notify the Department in writing within 10 days of the replacement.

3. An AWP operator shall notify the Department in writing within 10 days of the date the AWP operator either ceases operation of a facility or commences operation of another facility.

4. An AWP operator shall operate each facility in compliance with applicable state and federal law.

5. An AWPRA shall ensure that all collection systems encompassed by the enhanced source control program prescribed in R18-9-E824 are operated by a Grade 4 collection system operator.

6. An AWPRA shall ensure that all water reclamation facilities providing treated wastewater to an AWTF are operated by a Grade 4 wastewater treatment plant operator.

E. Certification.

1. The Department shall issue an AWP operator certificate to an applicant if the applicant:

a. Meets the experience requirements in subsection (K) for the applicable class and grade as outlined in this section,

b. Passes a written advanced water treatment examination, and

c. Has not had an operator's certificate revoked in Arizona or permanently revoked in another jurisdiction.

2. To apply for AWP operator certification, an applicant shall submit to the Department the following information, as applicable, on a form approved by the Director:

a. The applicant's full name, Social Security number, and operator number(s),

b. The applicant's current mailing address, home and work telephone numbers and e-mail address,

c. The applicant's place of employment, including the facility identification number,

d. The class and grade of the facility where the applicant is employed,

e. Proof of successful completion of the advanced water treatment examination and other applicable certificates, and

f. Documentation of the applicant's experience required under this section.

F. Examination.

1. The Department shall provide examinations for certification of AWP operators. The Department may contract with third party examiners for administration of examinations. The Department shall ensure that a list of approved examiners is available upon request.
2. The Department shall validate all examinations before administration. Each examination shall include topics such as advanced treatment technologies, system maintenance, regulatory protocols, safety, mathematics, and general system management.
3. The examiner shall grade the examination and make the results available to the applicant and the Department within seven days of the date of the examination.
4. An applicant shall not be admitted to an examination without a valid picture I.D.
5. An individual must achieve a score of at least seventy percent on the examination in order to attain a passing grade.
6. For applicants with a Grade 3 or Grade 4 wastewater treatment operator certification, the examination shall include an additional component which tests knowledge equivalent to the Grade 3 drinking water treatment operator examination.

G. Certificate Renewal.

1. If the Department renews a certificate, the certificate is renewed for a three-year period, unless the AWP operator requests a shorter renewal term in writing.
2. An AWP operator may renew their certificate without retaking the exam in accordance with the following:
   a. Prior to the end of their certificate period by submitting a renewal form; or
   b. Following the expiration of the certification period, if the AWP operator submits a completed renewal form to the Department within 90 days of the expiration date.
3. To renew a certificate, an AWP operator shall complete and submit to the Department an AWP operator certificate renewal, on a form approved by the Director.
4. An AWP operator shall provide the following documentation to the Department, upon request, if necessary to verify:
   a. Completion of at least 30 professional development hours accumulated during the certification period, of which at least 10 professional development hours directly relate to the specific job functions of the AWP operator, and
   b. Verification, in writing, by the AWP operator's supervisor, or the entity that provides the education or training, of the AWP operator's completion of each professional development hour.
5. An AWP operator shall maintain documentation of completion of professional development hours for a minimum of five years.
6. As an alternative to the requirements of subsection (G)(2), an AWP operator may renew a certificate by taking and passing an AWP operator examination.

H. Certificate Expiration.

1. A certification is valid for three years and shall expire on the expiration date, which is the end of the certification period.
2. An expired certification may be reinstated if the renewal is submitted within 90 days of expiration date, in accordance with subsection (G)(2)(b).
3. A person with an expired certificate shall re-apply in accordance with subsections (F) and (G) in order to be certified as an AWP operator.
4. An AWP operator certificate is considered expired if the supporting certificate has been denied, expired, suspended, or revoked.

I. AWP Operator Certificate Denial, Suspension, Probation, and Revocation.

1. The Department may deny, suspend, or revoke an AWP operator certificate, and may place an AWP operator on probation.
2. The Department shall deny a certificate if the application is deficient, the applicant fails to obtain a passing score on the examination, or upon any other determination that the applicant has not met the requirements of this section.
3. The Department may revoke or suspend a certificate, or place an AWP operator on probation, if the Department determines that the AWP operator:
   a. Operates a facility in a manner that violates federal or state law;
   b. Negligently operates a facility or negligently supervises the operation of a facility;
   c. Fails to comply with a Department order or court order;
   d. Obtains, or attempts to obtain, a certificate by fraud, deceit, or misrepresentation;
   e. Engages in fraud, deceit, or misrepresentation in the operation or supervision of a facility;
   f. Knowingly or negligently prepares a false or fraudulent report or record regarding the operation or supervision of a facility;
   g. Endangers the public health, safety, or welfare;
   h. Fails to comply with the terms or conditions of probation or suspension; or
   i. Fails to cooperate with an investigation by the Department including failing or refusing to provide information required by this section.
4. The action the Department takes under subsection (I)(3) may be made at the Department's discretion upon an examination of the individual facts and circumstances, the number of findings the Department makes under (I)(3), and upon consideration of other factors, such as but not limited to, additional aggravating circumstances not considered under (I)(3).

5. In performing any action under this subsection, the Department shall comply with the requirements in A.R.S. Title 41, Chapter 6, Article 10 and A.A.C. Title 18, Chapter 1, Article 2.

J. Reciprocity. The Department shall issue a certificate to an applicant who holds a valid certificate from another jurisdiction, if the applicant:

1. Passes a written, validated AWP operator examination in Arizona or in another jurisdiction that administers an AWP examination that is substantially equivalent to the examination in Arizona and validated by the Department, and
2. Submits written evidence of the experience required under subsection (K).

K. Experience.

1. The Department shall consider the following criteria to determine whether an applicant has the qualifying experience required for AWP operator certification:
   a. The type of operator certification held by the applicant, and
   b. Years of qualifying experience as a certified operator for a specific grade of facility.
2. An applicant shall provide evidence of certification as one of the following:
   a. A Grade 3 drinking water operator;
   b. A Grade 4 drinking water operator;
   c. A Grade 3 wastewater operator; or
   d. A Grade 4 wastewater operator.
3. An applicant shall provide evidence of qualifying experience in the applicable facility class.
4. An applicant shall meet the following requirements for admission to an AWP operator certification examination:
   a. A Grade 3 drinking water operator shall have at least two years' experience operating a Grade 3 drinking water treatment facility.
   b. A Grade 4 drinking water operator shall have at least one year of experience operating a Grade 4 drinking water treatment facility.
   c. A Grade 3 wastewater operator shall have at least two years' experience operating a Grade 3 wastewater treatment facility.
   d. A Grade 4 wastewater operator shall have at least two years' experience operating a Grade 3 or Grade 4 wastewater treatment facility.
5. An applicant that meets the requirements of this section and has passed the advanced water treatment examination shall be certified in accordance with the following:

a. An applicant with Grade 3 drinking water treatment certification with at least one year of advanced water treatment qualifying experience shall receive certification as AWP shift operator.

b. An applicant with Grade 4 drinking water treatment certification with at least one year of advanced water treatment qualifying experience shall receive certification as AWP operator in direct responsible charge.

c. An applicant with Grade 3 wastewater treatment certification with at least one year of advanced water treatment qualifying experience shall receive certification as AWP shift operator.

d. An applicant with Grade 3 wastewater treatment certification with at least one year of advanced water treatment qualifying experience shall receive certification as AWP shift operator.

6. Advanced water treatment qualifying experience may be obtained through any of the following:

a. Operating a pilot facility;

b. Operating an AWP demonstration facility that is not distributing finished water for human consumption;

c. Experiential reciprocity pursuant to subsection (J) of this section; or

d. An apprenticeship under an AWP operator on-site at an AWP facility including a pilot facility, demonstration facility, or AWTF.

7. Experience working at an AWTF shall count towards qualified experience at a Grade 4 drinking water plant.

L. Class and Grade Requirements.

1. Drinking Water Treatment and Distribution Systems.

a. The Department shall classify a drinking water treatment facility receiving AWP treatment credits under this Article as an AWTF.

b. The Department shall grade water distribution system AWPRA partners pursuant to A.A.C. R18-5-115(B).

2. Wastewater Treatment and Collection Systems.

a. A wastewater treatment plant that supplies treated wastewater to an AWTF shall be a Grade 4 facility for the purposes of Chapter 5, Article 1 of this Title.

b. Wastewater collection systems that collect and convey wastewater as a supply to an AWTF are required to be Grade 4 collection systems for the purposes of Chapter 5, Article 1 of this Title.

3. For a multi-facility system, the Department shall grade each facility in accordance with this subsection.

M. Transition.

1. Beginning two years from the effective date of the AWP programmatic rules in A.A.C. Title 18, Chapter 9, Article 8, all AWTFs shall be operated by AWP operators certified in accordance with this section.

2. During the two-year transition period, all AWTFs shall be operated by a Grade 4 certified drinking water operator who has completed appropriate training, approved by the Department.

R18-9-B805. Advanced Water Purification Responsible Agency Formation; Joint Plan

A. An AWPRA shall be the entity responsible for complying with the requirements of this Article.

1. Only one AWPRA shall be designated for an AWP project.
2. An AWPRA must be a person under A.R.S. § 49-201(33).

B. Joint Plan. An AWPRA shall develop a Joint Plan describing all partner coordination procedures, including but not limited to, the following:

1. Partner Details.
   a. Identification of each partner associated with the AWP project throughout the project's expected operational life,
   b. A description of the roles and responsibilities of each partner, including designation of a lead partner responsible for fulfilling the requirements under the communication plan established in accordance with subsection (B)(4), and
   c. The legal authority of each partner to fulfill its roles and responsibilities.
2. Procedures to ensure that the AWPRA will have knowledge of the current treatment and water quality monitoring status of any water reclamation facility delivering treated wastewater as a source to the AWP project,
3. Procedures to ensure the enhanced source control program complies with the requirements in this Article, pursuant to R18-9-E824,
4. A communication plan ensuring the timely dissemination of information regarding both treated wastewater and advanced treated water or finished water quality status and monitoring among all partners,
5. Procedures to provide access to the AWPRA and all partner facilities, operations, and records for inspection at any time by the Department,
6. Procedures to execute cross-connection control requirements, pursuant to Chapter 4, Article 2 and R18-9-F832 of this Article,
7. Procedures to execute corrosion control requirements, pursuant to Chapter 4, Article 1 and R18-9-F832,
8. Procedures to notify partners and the Department of treatment failure incidents and all corresponding corrective actions taken,
9. A plan outlining all enforcement and corrective actions taken should a partner fail to meet the requirements of this Article or violate the Joint Plan, and
10. Procedures to address changes to the AWPRA partners, including the addition of new partners and the removal of existing partners, in accordance with the requirements of the AWP program.

C. The AWPRA and all partners shall sign the Joint Plan.

D. The Joint Plan shall include copies of all necessary agreements executed to facilitate the operation of the AWP project, including but not limited to, copies of permits, memorandums of understanding, joint powers agreements, or intergovernmental agreements.

R18-9-B806. General Requirements

A. Delivery of advanced treated water or distribution of finished water is prohibited unless delivery or distribution approval is explicitly given to the AWPRA, either:

1. Through issuance of the AWP permit, if full-scale certification was completed and approved as part of the application; or
2. After satisfaction of the compliance schedule requirements pursuant to R18-9-C816(E).

B. Construction materials used at the AWTF, including materials used at AWPRA partner facilities, except for water reclamation facilities, that collect, treat, store, or distribute water for human consumption through pipes or other constructed conveyances, shall be lead-free as prescribed in A.R.S. § 49-353(B). This subsection shall not apply to leaded joints necessary for the repair of cast iron pipes.

C. Treated wastewater used to supply an AWP project shall be municipal wastewater in origin.

D. Confidentiality of Information. In accordance with A.R.S. § 49-205, any information submitted to the Director pursuant to this Article may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, the Director may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in A.R.S. § 49-205.

R18-9-B807. Inspections, Violations, and Enforcement

A. The Department shall conduct inspections of a permitted AWPRA facility as specified under A.R.S. § 41-1009 and according to sanitary survey requirements in A.A.C. Title 18, Chapter 4, if applicable.

B. Any person who violates a provision of Article 8 of this Chapter, applicable provisions in Chapters 4 and 5 of this Chapter, or a condition of an AWP permit or AWP demonstration permit is subject to the applicable enforcement actions established under A.R.S. Title 49.

R18-9-B808. Recordkeeping

A. The AWPRA shall collect and retain the following information for at least ten years:

1. Copies of laboratory analyses and chain of custody forms,

2. The results of all analyses of chemicals and pathogens, including laboratory data, and

3. Copies of all plans and technical components prepared and submitted to the Department under the AWP permit application.

B. For the records described in subsections (A)(1) through (A)(3), a responsible agent of the AWPRA shall sign the following certification statement "I certify, under penalty of law, that the activities conducted pursuant to the requirements of Title 18, Chapter 9, Article 8 have been made under my direction and supervision and under a system designed to ensure that qualified personnel properly gather and evaluate the information to determine whether the applicable requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

R18-9-B809. Construction and Compliance with Plans

A. An AWPRA shall conform to all proposed plans and specifications when constructing any part of their pilot facility such that the facility accurately reflects the proposal as recorded.

1. Prior to issuance of an AWP permit or demonstration permit and when the pilot facility is the same as the proposed full-scale facility, any change in a proposed design that will affect advanced treated water or finished water quality, capacity, flow, or performance, shall be documented by the AWPRA applicant and submitted to the Department for review and approval in the form of revised plans and specifications, record drawings and a written statement regarding the reasons for the change.

2. The record drawings shall be drafted pursuant to R18-9-B810.

B. An AWPRA shall conform to all approved plans and specifications when constructing any part of their full-scale facility.

1. Following issuance of an AWP permit, any change in an approved design that will affect advanced treated water or finished water quality, capacity, flow, or performance, shall be submitted by the AWPRA to the Department for review and approval through a permit amendment.

2. Upon a change to an approved design, the AWPRA shall notify the Department and shall not proceed with any construction related to the design change without written approval from the Department, except in cases of emergency in which the AWPRA must act promptly to respond to an immediate and significant threat to human health and approval from the Department would unduly delay or prevent the AWPRA from addressing the threat. In instances of emergency, the AWPRA shall at the first available and safe moment, but not exceeding 30 days after the emergency:

   a. Notify the Department of the emergency,

   b. Detail the change made from the approved design, and

   c. Describe all response methods utilized during the emergency to protect advanced treated water quality.

3. An AWPRA's failure to notify and obtain the Department's approval of a change in an approved design is subject to enforcement as a permit violation pursuant to R18-9-B807.

R18-9-B810. Record Drawings

A. An Arizona-registered professional engineer shall clearly and accurately record or mark, on a complete set of working project drawings, each deviation from the original plan, and a written summary of each deviation which shall include, but is not limited to:

1. A description of the deviation,
2. The reason for the deviation, and
3. The projected impact the deviation will have on advanced treated water quality. If an impact is identified, the description shall be accompanied by an explanation on how the AWPRA will address the impact to maintain compliance with advanced treated water quality standards.

B. The set of marked drawings and written summary of deviations becomes the record drawings, reflecting the project as actually built.

C. The professional engineer registered in Arizona shall sign, date, and place their engineer's seal on each sheet of the record drawings and written summary of deviations and submit them to the Department as part of the permit application. The record drawings shall be accompanied by an engineer's certificate of completion, signed by the professional engineer.

D. Quality control testing results and calculations shall be submitted with the engineer's certificate of completion together with field notes and the name of the individual witnessing the tests.

R18-9-B811. Outreach; Public Communications Plan

A. An AWPRA applicant/permittee shall develop a Public Communications Plan for the purpose of providing drinking water consumers in the service area with education, awareness, and transparency related to the AWP project.

B. Public Communications Plan. The Plan shall include, but is not limited to, the following:

1. Consumer Notification.
   a. An AWPRA applicant shall notify all drinking water consumers of its intention to apply for an AWP permit for treatment and delivery of advanced treated water or distribution of finished water as a drinking water source.
   b. An AWPRA applicant/permittee shall maintain communication with the consumers throughout all major program phases, including planning, application, operations, and post-operations.
   c. Throughout the planning phase, the AWPRA applicant shall:

i. Communicate to the public through the use of a local, publicly-accessible repository in which the AWPRA posts information about the AWP project, contains a forum for public question and comment, and a place for responses. Such a repository shall be active at the time the AWPRA applicant submits an AWP project permit application to the Department, and shall be maintained for the lifetime of the project,

ii. Provide at least one notification by mail or by another Department-approved method to all of its consumers prior to a public meeting related to the AWP project,

iii. Schedule and hold at least one public meeting during the planning stage of the AWP project,

iv. Communicate to the public through at least one additional Department-approved method in accordance with subsection (B)(2) of this section, and

v. Provide all relevant information in all appropriate languages, as necessary, and provide contact information to the public on how a consumer may obtain translated written communications or request language assistance for written and oral communications.

d. During the application phase, the AWPRA applicant shall schedule and hold at least one public meeting no less than six months prior to distributing finished water from the AWP project.

2. Acceptable Methods of Communication. Department-approved methods of communication include the following:

a. Coverage through a local news outlet (e.g. television, newspaper, social media);

b. Community event(s) (e.g. setting up table/booth);

c. Local school(s) and school events;

d. Providing opt-in email or text notifications to customers;

e. Consumer confidence reports, water bill inserts, or other mail notification;

f. Neighborhood association meeting(s) and civic organizations; or

g. Other methods may be accepted at the Director's discretion.

3. Community Engagement.

a. An AWPRA applicant shall involve local government(s) throughout the AWP project phases, as necessary.

b. An AWPRA applicant shall develop a list of all relevant stakeholders and interest-holders that they intend to communicate with. Such a list shall, at a minimum, include local health authorities and medical professionals, and may additionally include:

i. City/town councils and boards;

ii. Local elected officials;

iii. Community organizations that represent disproportionately impacted communities,

iv. Local environmental groups;

v. Industry groups; or

vi. Schools/school boards.

c. An AWPRA applicant may conduct surveys, focus groups, or other means of collecting local information for the purpose of demonstrating community perception and opinion of the prospective AWP project introduction, and throughout all succeeding project phases.

4. Certification.

a. An AWPRA applicant shall certify the Plan meets the minimum requirements in this section.

b. The certified Plan shall include details demonstrating compliance with the requirements of this section, including, but not limited to:

i. Access to the publicly-accessible repository, such as a web address,

ii. Description of the methodology selected for communication,

iii. The numbers of mailers sent to the public,

iv. The number of government entities and other leaders engaged with,

v. A description of the public meetings held including dates, times, and methods of notice, and

vi. A description of any outreach conducted in other languages.

c. An AWPRA applicant shall submit a draft Plan as a component of the AWP permit application pursuant to R18-9-C816.

d. After being issued the AWP permit, and at least 30 days prior to distributing advanced treated water or delivering finished water, an AWPRA shall submit a certified final Plan to the Department pursuant to the compliance schedule set forth in their AWP permit.

PART C. PRE-PERMIT AND PERMIT REQUIREMENTS

R18-9-C812. Pre-Application Conference; Project Advisory Committee

A. Upon request of the AWPRA applicant, the Department shall schedule and hold pre-application conference(s) with the AWPRA applicant to discuss the requirements of this Article.

B. The Department may assemble a project advisory committee for the purpose of providing project-specific technical consultation to the Department throughout the application process.

1. The project advisory committee may be composed of appropriate experts selected by the Department to assist in review as necessary.
2. Experts may include, but are not limited to, toxicologists, State of Arizona licensed engineers, epidemiologists, microbiologists, chemists, and utility representatives.
3. Project advisory committee recommendations are advisory only.
4. Reviews by the project advisory committee shall be conducted within the applicable Licensing Time Frames in Chapter 1, Article 5 of this Title.

R18-9-C813. Applicant Pathways Depending on National Pretreatment Program Applicability

A. An AWPRA applicant shall submit the application components in the order and format set forth in this section, in addition to the order and format prescribed by the applicable rules within this Article.

B. National Pretreatment Program AWPRA. An AWPRA with all water reclamation facility partner(s) subject to the National Pretreatment Program may elect to either:

1. Submit the Initial Source Water Characterization Plan and the Pilot Study Plan to the Department for review and comment prior to the AWP permit application in the order and format set forth in R18-9-C814 and R18-9-C815; or
2. Submit the Initial Source Water Characterization Report and Piloting Report to the Department for approval as components of the AWP permit application pursuant to R18-9-C816.

C. Non-National Pretreatment Program AWPRA. An AWPRA with at least one water reclamation facility partner not subject to the National Pretreatment Program shall, throughout the pre-application period and in the order and format set forth in R18-9-C814 and R18-9-C815:

1. Submit the Initial Source Water Characterization Plan and the Pilot Study Plan to the Department for review and comment, and
2. Submit the Initial Source Water Characterization Report and Pilot Report to the Department for approval pursuant to R18-9-C816.

R18-9-C814. Initial Source Water Characterization

A. An AWPRA applicant shall develop an Initial Source Water Characterization Plan and shall conduct initial monitoring of any treated wastewater proposed to be used as a source for an AWTF.

B. Initial Source Water Characterization Plan. An initial source water characterization monitoring plan, or Initial Source Water Characterization Plan, shall be developed and followed when conducting initial monitoring in accordance with this section.

1. A Non-National Pretreatment Program AWPRA applicant shall submit the Initial Source Water Characterization Plan to the Department for review and comment prior to conducting initial source water monitoring under this section. Along with the Initial Source Water Characterization Plan, the AWPRA applicant shall submit the following additional preliminary components to the Department for review and comment:
   a. A draft Enhanced Source Control Plan prepared pursuant to R18-9-E824,
   b. A draft technical, managerial, and financial, or Technical, Managerial, and Financial Capacity Plan, prepared pursuant to R18-9-F833,
   c. A proposed pilot train designed pursuant to R18-9-C815, and
   d. A draft Public Communications Plan prepared pursuant to R18-9-B811.
2. A National Pretreatment Program AWPRA applicant may submit the Initial Source Water Characterization Plan to the Department for review and comment prior to conducting initial source water monitoring under this section, or otherwise shall submit the Initial Source Water Characterization Plan and Report to the Department as a component of the AWP permit application prepared pursuant to R18-9-C816. An AWPRA applicant that elects to submit the Initial Source Water Characterization Plan to the Department for review and comment prior to conducting initial source water monitoring under this section may also elect whether or not to submit the additional preliminary components listed in subsection (B)(1) to the Department for contemporaneous review and comment.

C. Monitoring. An AWPRA applicant shall conduct initial source water monitoring at all water reclamation facilities delivering treated wastewater as a source to an AWTF as applicable under R18-9-A802(C).

1. Monitoring shall be conducted at a location before any treatment process that will be used for a treatment credit in the AWP project and before the point of diversion to the AWTF.
2. Chemical Monitoring.
   a. The AWPRA applicant shall collect a minimum of twelve monthly composite samples representative of seasonal variability.
   b. If there is wide variability in a chemical concentration, meaning the coefficient of variation is greater than fifty percent, the AWPRA applicant shall reasonably increase the sampling interval in order to evidence this variability.
   c. The AWPRA applicant shall sample for the following chemicals, excluding those identified on the projected chemical treatment list developed in R18-9-E826:
      i. Tier 1 chemicals,
      ii. Tier 2 chemicals pursuant R18-9-E826(D), and
      iii. Any projected Tier 3 chemicals.

3. Pathogen Monitoring.

a. The AWPRA applicant shall utilize reference pathogens to monitor pathogen treatment within the AWP project and establish log reduction requirements consistent with either a standard log reduction approach or a site-specific log reduction approach pursuant to R18-9-E828.

b. Standard Log Reduction. If the AWPRA applicant selects the standard log reduction approach to pathogen control, no initial pathogen monitoring is required as part of initial source water characterization.

c. Site-Specific Log Reduction. If the AWPRA applicant selects the site-specific log reduction approach to pathogen control, the AWPRA applicant shall perform initial pathogen monitoring as part of initial source water characterization by following the prescribed sampling protocol pursuant to R18-9-E828(C).

D. In addition to the requirements of this section, initial source water monitoring under an Initial Source Water Characterization Plan shall be conducted using good engineering practices. Methods for initial source water monitoring shall be approved if the AWPRA applicant can demonstrate that the methods are sufficiently detailed and robust for the purpose of characterizing the treated wastewater used as a source for an AWTF in such a manner that informs the proposed pilot and full-scale treatment train design and serves as an accurate representation of the collection system.

1. ADEQ shall develop and make available guidance on conducting initial source water monitoring under an Initial Source Water Characterization Plan.
2. An Initial Source Water Characterization Plan developed in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.

E. Report. An Initial Source Water Characterization Report shall be finalized within three years of the commencement of initial source water monitoring or at the Director's discretion. The Initial Source Water Characterization Report shall be prepared pursuant to R18-9-A802(C) and shall include, but is not limited to, the following:

1. The date, time, frequency and exact place of sampling,
2. The name of each individual who performed the sampling,
3. The procedures used to collect the samples,
4. The dates the sample analyses were completed,
5. The name of each individual or laboratory performing sample analysis,
6. The analytical techniques or methods used to perform the sampling and analysis,
7. The chain of custody records,
8. Any field notes relating to the information described under this subsection,
9. The sampling results which account for seasonal variability,

10. Corresponding laboratory data for all samples, and

11. A copy of the Initial Source Water Characterization Plan developed in subsection (B).

F. Report Submission.

1. A Non-National Pretreatment Program AWPRA applicant shall submit the Initial Source Water Characterization Report in subsection (E) to the Department for review and comment as a component of the Pilot Study Plan prepared pursuant to R18-9-C815. Additionally, a Non-National Pretreatment Program AWPRA applicant shall submit the Initial Source Water Characterization Report as a component of the AWP permit application prepared pursuant to R18-9-C816.

2. A National Pretreatment Program AWPRA applicant, if electing to submit a Pilot Study Plan to the Department for review and comment, may include the Initial Source Water Characterization Report in subsection (E) as a component, or otherwise shall submit the Initial Source Water Characterization Report as a component of the AWP permit application prepared pursuant to R18-9-C816.

G. The Department shall consider an AWPRA applicant's conformance with the initial source water characterization requirements in this Article as a component of the AWP permit application. The Director shall deny an AWP permit application if a determination is made that, under the Initial Source Water Characterization Plan, monitoring was improperly conducted or is otherwise insufficient to achieve the objectives of chemical and pathogen characterization, or if the Initial Source Water Characterization Report is incomplete or otherwise insufficient to demonstrate compliance with the Plan.

R18-9-C815. Pilot Study

A. An AWPRA applicant shall develop a Pilot Study Plan and conduct piloting on a pilot treatment train.

1. If an AWPRA builds a pilot facility to full-scale, an AWPRA may conduct full-scale verification pursuant to R18-9-F835 in lieu of the piloting requirements in this section. For the purposes of the permit application pursuant to R18-9-C816, the Full-Scale Verification Plan and Report shall be submitted instead of the Pilot Study Plan and Pilot Study Report.

2. An operator of a pilot facility may be credited with advanced water treatment qualifying experience under R18-9-B804.

B. Pilot Study Plan. A Pilot Study Plan shall be followed when constructing the pilot treatment train and piloting in accordance with this section.

1. A Non-National Pretreatment Program AWPRA applicant shall submit the Pilot Study Plan to the Department for review and comment prior to conducting piloting under this section.

2. A National Pretreatment Program AWPRA applicant may submit the Pilot Study Plan to the Department for review and comment prior to conducting piloting under this section, an approach recommended by the Department, or otherwise shall submit the Pilot Study Plan to the Department as a component of the AWP permit application prepared pursuant to R18-9-C816.

3. The Plan shall include, but is not limited to, the following:

   a. The pilot study objectives,

   b. A description of the proposed pilot treatment train,

   c. The design criteria for each treatment component pursuant to R18-9-F832,

   d. A design report and drawing,

   e. An explanation of the pilot train's representation of the scale and the performance of the proposed full-scale AWTF and the selected treatment components therein,

   f. A time period for which the pilot study will be conducted of no less than one year of continuous operation,

   g. A monitoring plan which shall include, but is not limited to, the following:

      i. The proposed monitoring, instrumentation, and any additional requirements pursuant to R18-9-A802(C).

      ii. The proposed chemical critical control points designated pursuant to R18-9-E827(D),

      iii. The proposed pathogen critical control points designated pursuant to R18-9-E828(D), and

      iv. An advanced treated water sampling plan, and

   h. The proposed Tier 3 chemical list and associated critical control points prepared pursuant to R18-9-E827,

   i. The projected chemical treatment list prepared pursuant to R18-9-E826(F), and

   j. A TOC Characterization Plan of all original drinking water sources, pursuant to the Trace Organics Removal Procedure under R18-9-F834(C)(1), if the AWPRA selects the Site-Specific TOC Management Approach.

4. The Pilot Study Plan may include the Initial Source Water Characterization Report prepared pursuant to R18-9-C814(E), if finalized prior to piloting.

5. The pilot treatment train shall be selected from, and optimized in accordance with, the projected chemical treatment list developed pursuant to R18-9-E826(F) and pathogen log reduction values established pursuant to R18-9-E828.

6. If a Pilot Study Plan includes the discharge of effluent and the facility is subject to the APP program, an APP application for permit coverage shall be submitted and effective before pilot train operation.

C. Piloting.

1. Pathogen and chemical removal shall be demonstrated during the pilot study by conducting sampling in accordance with the established monitoring plan developed in subsection (B)(3)(g).

2. Sampling shall be conducted at a minimum of two locations, the influent and effluent of the pilot treatment train, in accordance with the proposed critical control points.

D. Report. At the conclusion of piloting a Pilot Study Report shall be prepared and submitted to the Department as a component of the AWP permit application pursuant to R18-9-C816. The Pilot Study Report shall include, but is not limited to, the following:

1. A demonstration of the effectiveness, reliability, and consistency of the treatment components in achieving pathogen and chemical removal, as well as TOC management in accordance with the Pilot Study Plan under subsection (B).
2. A list of water reclamation facility operational parameters and ranges that produced the AWTF treated wastewater influent water quality.

E. The Department shall consider an AWPRA applicant's conformance with the pilot study requirements in this Article as a component of the AWP permit application. The Director shall deny an AWP permit application if a determination is made that, under the Pilot Study Plan, piloting was improperly conducted or is otherwise insufficient to achieve the objectives of the pilot study, or if the Pilot Study Report is incomplete or otherwise insufficient to demonstrate compliance with the Pilot Study Plan.

F. In addition to the requirements of this section, the pilot study shall be conducted using good engineering practices. Methods for conducting the pilot study shall be approved if the AWPRA applicant can demonstrate that the methods sufficiently and consistently verify the performance of the chosen treatment components, provide the opportunity to evaluate the effectiveness of different types of treatment components, and inform the design of the full-scale AWP treatment train.

1. ADEQ shall develop and make available guidance on conducting an AWP pilot study.
2. An AWP pilot study conducted in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.

R18-9-C816. Permit Application

A. An AWPRA applicant for an AWP permit shall provide the Department with the following information on an application form prescribed by the Director:

1. Application: Administrative Requirements.
   a. The names and mailing addresses of all AWPRA partners,
   b. The names and mailing addresses of the representative of the AWPRA and owners and operators of all AWPRA partner facilities,
   c. The legal description, including latitude and longitude, of the location of all AWPRA partner facilities,
   d. The expected operational life of the AWPRA partner facilities,

e. The permit number for any other federal or state environmental permit issued to any AWPRA partner for that facility or site,

f. A copy of the AWPRA's Joint Plan and corresponding agreements pursuant to R18-9-B805,

g. A copy of the certificate of disclosure required by A.R.S. § 49-109,

h. Evidence that the AWTF complies with applicable municipal or county zoning ordinances, codes, and regulations,

i. Certification in writing that the information submitted in the application is true and accurate to the best of the AWPRA applicant's knowledge, and

j. All applicable fees established in 18 A.A.C. 14.

2. Application: Technical Requirements.

a. Detailed completed or prospective construction plans of the site, presented in legible form and of sufficient scale and detail to establish construction requirements and to facilitate effective review,

b. Record drawings pursuant to R18-9-B810,

c. Complete specifications to supplement the completed or prospective construction plans in subsection (A)(2)(a), including vendor data demonstrating validation information,

d. A design report which:

i. Describes the completed or prospective construction and the basis of design,

ii. Provides design data and other pertinent information that defines the work, and

iii. Establishes the adequacy of the design to meet the system demand and comply with the requirements of this Article, and

e. A Full-Scale Verification Plan, including data demonstrating scaling feasibility, prepared pursuant to R18-9-F835,

f. A draft Operations Plan prepared pursuant to R18-9-F836,

g. The Pilot Study Plan and Report prepared pursuant to R18-9-C815, if applicable under R18-9-C815(A)(1),

h. The Full-Scale Verification Report prepared pursuant to R18-9-F835, if applicable under R18-9-C815(A)(1),

i. A list of construction material used pursuant to R18-9-B806,

j. A demonstration of technical, managerial, and financial capacity pursuant to R18-9-F833,

k. An initial Enhanced Source Control Plan pursuant to the program developed in R18-9-E824,

l. The Initial Source Water Characterization Plan and Initial Source Water Characterization Report prepared pursuant to R18-9-C814,

m. A demonstration of compliance with all minimum design requirements pursuant to R18-9-F832,

n. The proposed pathogen and chemical action levels for ongoing monitoring pursuant to R18-9-A802(C),

o. The draft Public Communications Plan pursuant to R18-9-B811,

p. A Tier 2 analysis pursuant to R18-9-E826,

q. A Tier 3 Chemical list, associated critical control points and explanation pursuant to R18-9-E827,

r. Evidence of an APP authorizing any discharge from an AWTF that occurred, occurs or will occur during piloting, full-scale verification, operation or otherwise,

s. Demonstration that the AWPRA meets applicable A.A.C. Title 18, Chapter 4 and Chapter 5 requirements, and

t. Any other relevant information required by the Department to determine whether to issue a permit.

B. Draft Permit. The Department shall provide the AWPRA applicant with a draft of the AWP permit prior to publication of the Notice of Preliminary Decision pursuant to R18-9-D820.

C. Permit Issuance or Denial. The following requirements apply in addition to the requirements in R18-9-D823:

1. The Director shall issue an AWP permit, based upon the information obtained by or made available to the Department, if the Director determines that the AWPRA applicant is in compliance with this Article, and the applicable requirements in Chapter 4, Articles 1 and 2, and Chapter 5, Article 5.
2. The Director shall provide the AWPRA applicant with written notification of the final determination to issue or deny the permit within the overall licensing time-frame requirements under 18 A.A.C. 1, Article 5, Table 10 and the following:
   a. The AWPRA applicant's right to appeal the final permit determination, including the number of days the applicant has to file a protest and the name and telephone number of the Department contact person who can answer questions regarding the appeals process,
   b. If the AWP permit is denied under R18-9-D823, the reason for the denial with reference to the statute or rule on which the denial is based, and
   c. The AWPRA applicant's right to request an informal settlement conference under A.R.S. §§ 41-1092.03(A) and 41-1092.06.

D. The Department shall only approve an AWP permit for an AWPRA applicant when all AWPRA partners are in compliance with this Chapter and applicable Chapter 4 and Chapter 5 requirements, or are making satisfactory progress towards compliance under a schedule previously approved by the Department.

E. Post-Permit Issuance Compliance Schedule.

1. The technical components listed in subsection (E)(2) below are not required as part of the application in subsections (A) and (B) but are required prior to delivery of advanced treated water or distribution of finished water.
2. The following technical components shall be submitted in the time and manner set forth in a compliance schedule which shall be established by the Department under the AWP permit:

a. The final design documents including as-built construction and configuration reports of all engineered elements of the facility prepared pursuant to R18-9-B810 and any document changes from what was proposed in the pre-construction application requirements.

b. An Operations Plan prepared pursuant to R18-9-F836, including, but not limited to, a list of operators who are certified by the Department appropriately for all facilities within an AWP project, including any finished water distribution systems,

c. The Full-Scale Verification Report prepared pursuant to R18-9-F835,

d. A vulnerability assessment prepared pursuant to R18-9-F837,

e. Compliance with approved plans pursuant to R18-9-B809,

f. The final Public Communications Plan pursuant to R18-9-B811,

g. The final Enhanced Source Control Plan pursuant to the program developed in R18-9-E824,

h. An engineer's certificate of completion of the final inspection of the AWTF, signed, dated, and sealed by an Arizona-registered professional engineer in a format approved by the Department, and

i. Any other relevant information required by the Department.

3. Compliance schedule items under subsection (E)(2) may require a permit amendment.

F. If a compliance schedule is included as part of an AWP permit, delivery of advanced treated water or distribution of finished water is prohibited until all delivery or distribution-critical post-permit compliance schedule items pursuant to subsection (E) are met and any associated permit amendments are in effect.

G. All design plans, specifications, and design reports submitted under this section shall be signed, dated, and sealed by an Arizona-registered professional engineer. The Arizona-registered professional engineer shall demonstrate the following information to the Department for each person principally responsible for designing the facility:

1. Pertinent licenses or certifications held by the person,
2. Professional training relevant to the design of an AWTF, water reclamation facility, or drinking water treatment facility,
3. Work experience relevant to the design of AWTF, water reclamation facilities, or drinking water treatment facilities, and
4. A verification letter from an independent party certifying the performance of a manufacturer's equipment or a product that the professional engineer is relying upon for treatment credits, along with the information required under subsections (G)(1), (2), and (3) of this section, for the independent party certifying the product.

R18-9-C817. Demonstration Permit

A. An AWPRA may apply for an AWP demonstration permit for the purpose of showcasing the AWTF for public outreach, finished water tasting, and other related non-distribution purposes.

B. Introduction of advanced treated water into a drinking water distribution system for human consumption is prohibited under an AWP demonstration permit.

C. Demonstration Permit Application.

1. An AWPRA applying for an AWP demonstration permit shall comply with all requirements of this Article, and all application requirements pursuant to R18-9-C816, excluding the requirement to demonstrate full-scale verification.
    a. The piloting requirements in R18-9-C815 may be abbreviated at the Director's discretion, but may not be of a period of less than 6 months.
    b. If an applicant reports significant failures at a critical control point during abbreviated piloting, the Director may require other measures.
2. The AWPRA applicant applying for an AWP demonstration permit shall submit a preliminary application containing the information required in subsection (C)(1) to the Department on an application form prescribed by the Director.
3. The Department shall, based on the preliminary application and in consultation with the AWPRA applicant, provide the AWPRA applicant notice of any additional information that is necessary to complete the application.
4. The AWP operator shall operate the demonstration facility if distributing water to the public for demonstration purposes.

D. All design plans, specifications, and design reports submitted under this section shall be signed, dated, and sealed by an Arizona-registered professional engineer. The Arizona-registered professional engineer shall make the following demonstration to the Department for each person principally responsible for designing the facility:

1. Pertinent licenses or certifications held by the person,
2. Professional training relevant to the design of an AWTF, water reclamation facility, or drinking water treatment facility, and
3. Work experience relevant to the design of AWTF, water reclamation facilities, or drinking water treatment facilities.

E. Demonstration AWTFs shall only be built to pilot or full-scale.

F. Bench scale demonstration AWTFs are prohibited.

G. An operator of an AWP demonstration facility may be credited with advanced water treatment qualifying experience under R18-9-B804.

H. The public notice and public participation requirements in R18-9-D819 and R18-9-D820 apply to demonstration permits issued under this section.

I. The permit suspension, revocation, denial, and termination requirements in R18-9-D823 apply to demonstration permits issued under this section.

J. The permit term and permit renewal requirements in R18-9-D822 apply to demonstration permits issued under this section.

R18-9-C818. Compliance Schedule

A. An AWPRA shall follow the compliance schedule established in the AWP permit.

1. If a compliance schedule provides that an action is required more than one year after the date of permit issuance, the schedule shall establish interim requirements and dates for their achievement.
2. If the time necessary for completion of an interim requirement is more than one year and is not readily divisible into stages for completion, the permit shall contain interim dates for submission of reports on progress toward completion of the interim requirements and shall indicate a projected completion date.
3. An AWPRA shall submit to the Department a compliance schedule item report documenting that the required action was taken within the time period specified in the compliance schedule of the AWP permit.
4. After reviewing the compliance schedule activity, the Director may amend the AWP permit, based on changed circumstances relating to the required action.

B. Distribution of advanced treated water is prohibited until the Department approves all compliance schedule items established under the AWP permit pursuant to R18-9-C816(E).

C. The Department shall consider all of the following factors when setting any additional compliance schedule requirements not prescribed under R18-9-C816(E):

1. The impact on advanced treated water quality,
2. The impact on drinking water customers,
3. The requirements for permit amendment, and
4. Any other factors determined at the Director's discretion.

PART D. GENERAL PERMIT REQUIREMENTS

R18-9-D819. Public Notice

A. AWP Permits.

1. The Department shall provide the entities specified in subsection (A)(2) with monthly written notification, by regular mail or electronically, upon the occurrence of any of the following:

a. Receipt of AWP permit or demonstration permit applications;

b. Preliminary and final determinations by the Director related to issuance or denial of an AWP permit or demonstration permit;

c. Issuance of significant permit amendments;

d. A determination made by the Director to revoke a permit; or

e. Issuance of a permit renewal.

2. Entities.

a. Each county department of health, environmental service department, or comparable department,

b. A federal, state, local agency, or council of government, that may be affected by the permit action, and

c. A person who requested, in writing, notification of the activities described in subsection (A)(1).

B. The Department shall additionally post the information referenced in subsections (A)(1) and (2) on the Department website: www.azdeq.gov.

R18-9-D820. Public Participation

A. Notice of Preliminary Decision.

1. The Department shall publish a notice of preliminary decision regarding the issuance or denial of a significant amendment or a final permit determination related to an AWP project on its website.

a. Along with the public notice, the Department shall provide a copy of the draft permit along with a fact sheet for the AWP project.

b. The AWPRA applicant or permittee of the AWP project shall publish the notice of preliminary decision regarding the issuance or denial of a significant amendment or a final permit determination in a mailer sent to all drinking water customers within their service area.

2. The Department shall accept written comments from the public before a significant amendment or a final permit determination is made. Written public comment is limited to the scope of the issuance or denial of a significant amendment or a final permit determination under subsection (A)(1) of this section.

3. The written public comment period begins on the publication date of the notice of preliminary decision and extends for a minimum of 30 days.

B. Public hearing.

1. The Department shall provide, at minimum, a 30-day notice and shall conduct a public hearing to address a notice of preliminary decision regarding a significant amendment or final permit determination if:

a. Significant public interest in a public hearing exists; or

b. Significant issues or information has been brought to the attention of the Department that have not been considered previously in the permitting process.

2. If, after publication of the notice of preliminary decision, the Department determines that a public hearing is necessary, the Department shall schedule a public hearing and publish notice of the public hearing on its website and the AWPRA applicant or permittee of the AWP project shall publish the notice of public hearing in a mailer sent to all drinking water customers within their service area.

3. The Department shall accept written public comment until the close of the hearing record.

C. The Department shall respond in writing to all comments submitted during the public comment period.

D. The Department shall notify an AWPRA applicant or permittee of a significant amendment or final permit determination through regular or electronic mail.

1. Simultaneously, and in the same manner, the Department shall provide a notice of the amendment or determination along with the summary of response to comments to any person who submitted comments or attended a public hearing on the significant amendment or final permit determination.

2. The AWPRA applicant or permittee of the AWP project shall publish the final determination regarding the issuance or denial of a significant amendment or a final permit determination in a mailer sent to all drinking water customers within their service area.

R18-9-D821. Permit Amendments

A. The Director may amend an AWP permit based upon a request or upon the Director's initiative.

1. A permittee shall submit a request for permit amendment in writing on a form prescribed by the Director with the applicable fee established in A.A.C. Title 18, Chapter 14, explaining the facts and reasons justifying the request.

2. The Department shall process amendment requests following the licensing time-frames established under A.A.C. Title 18, Chapter 1, Article 5, Table 10.

3. An amended permit supersedes the previous permit upon the effective date of the amendment.

B. Significant Amendment.

1. Significant AWP permit amendments may include, but are not limited to:

a. Changes to the enhanced source control program that will result in a change in the water quality of any unit of operation or the advanced treated water,

b. Any modification to the facility that will result in a change in the water quality of any unit of operation or the advanced treated water,

c. Any change to the critical control points,

d. Reductions to monitoring,

e. Changes to any approved blending plans,

f. Significant source water quality changes that will result in a change in the water quality of any unit of operation or the advanced treated water,

g. The addition or removal of an AWPRA partner from the AWPRA, and

h. Authorization to deliver advanced treated water or distribute finished water following completion of post-permit compliance schedule items.

2. An AWPRA shall submit, along with the detailed permit amendment request in subsection (A)(1), an explanation of the proposed modifications as well as the safeguards that the AWTF will implement to ensure that the quality of the water served will not be adversely affected by any modification.

C. Minor Amendment. Minor AWP permit amendments may include, but are not limited to:

1. Correcting typographical errors,

2. Changing non-technical administrative information,

3. Correcting minor technical errors, such as locational information and citations of law,

4. Increasing the frequency of monitoring or reporting,

5 Making changes in a recordkeeping retention requirement, and

6. Changes to the treatment train, monitoring equipment, or any other component that is not a replacement of, or substantially similar to the approved components, but will not result in a change in the advanced treated water.

D. The public notice and public participation requirements in R18-9-D819 and R18-9-D820 apply to a significant amendment. A minor amendment does not require public notice or public participation.

R18-9-D822. Permit Term; Permit Renewal

A. An AWP permit and demonstration permit are valid for five years from the date the permit is issued pursuant to R18-9-C816.

B. An AWPRA authorized under an AWP permit or demonstration permit shall submit an application for renewal on a form prescribed by the Director with the applicable fee established in A.A.C. Title 18, Chapter 14 at least 180 calendar days before the end of the permit term.

1. If an administratively complete application for renewal of an AWP permit or demonstration permit is not received by the Department prior to the end of the permit term, the AWP permit or demonstration permit expires.
2. If an administratively complete application for renewal of an AWP permit or demonstration permit is received by the Department prior to the end of the permit term, the AWP permit or demonstration permit term extends until a renewal determination is made.

C. The AWPRA shall demonstrate the following requirements to the Department in a renewal application submitted on a form prescribed by the Director:

1. Continued compliance throughout the most recent AWP permit term, or otherwise documentation of data related to any excursion from approved advanced treated water quality parameters,
   a. Excursions shall be monitored at all AWP project components including, but not limited to:
      i. The treatment process at the AWTF,
      ii. The treatment process at the WRF,
      iii. The collection system, and
      iv. Any non-domestic discharger regulated under the enhanced source control program, and
   b. If excursions are detected, the AWPRA shall demonstrate evidence of corrective actions taken in response to the excursion and data confirming that those corrective actions did not impact advanced treated water quality.
2. Facility design documents and as-built construction and configuration reports of all engineered elements of the facility which accurately represent the most current facility, pursuant to R18-9-B810, along with documentation of any compliance challenges with the approved facility design within the most recent AWP permit term,
3. Any proposed modification to an operation, treatment process, treatment configuration, or water quality parameter from the facility design most recently approved under an AWP permit shall result in preparation and submission the applicable, following documents to the Department:
   a. Detailed construction plans of the site and work to be done, presented in legible form and of sufficient scale, to establish construction requirements to facilitate effective review,
   b. Complete specifications to supplement the construction plans in subsection (C)(3)(a), including vendor data demonstrating validation information,
   c. A design plan that describes the proposed construction and basis of design, provides design data and other pertinent information that defines the work to be done, and establishes the adequacy of the design to meet the system demand and the requirements of this Article,

d. A certificate of completion of a final inspection of the AWTF signed, dated, and sealed by an Arizona-registered professional engineer in a format approved by the Department,

e. A Pilot Study Plan and report prepared pursuant to R18-9-C815,

f. A list of construction material used pursuant to R18-9-B806, and

4. An updated Operations Plan, prepared pursuant to R18-9-F836, and revised, as necessary, which includes, but is not limited to:

a. An updated list of operators who are certified by the Department appropriately for all facilities within an AWP project, including any finished water distribution systems, and

b. Documentation of any periods of operator absence within the most recent AWP permit term, and

5. An updated vulnerability assessment, prepared pursuant to R18-9-F837, along with documentation of any compliance challenges with the vulnerability mitigation approach previously adopted within the most recent AWP permit term,

6. An updated Public Communications Plan, prepared pursuant to R18-9-B811, along with documentation of any changes to the AWPRA's service area during the most recent AWP permit term that affected plan implementation,

7. An updated Enhanced Source Control Plan, prepared pursuant to the program developed in R18-9-E824, with documentation of any changes to the Plan within the most recent AWP permit term,

8. An updated technical, managerial, and financial demonstration, prepared pursuant to R18-9-F833, with documentation of any changes made to the previously approved demonstration in effect during the most recent AWP permit term,

9. Documentation of source water characterization in compliance with the approach under initial source water characterization pursuant to R18-9-C814, as applicable if changes to the sewershed occur which impact the source water characterization report in effect during the most recent AWP permit term,

10. A renewed demonstration of compliance with all minimum design requirements pursuant to R18-9-F832, and

11. An updated Monitoring Plan, prepared pursuant to R18-9-E829, including the proposed pathogen and chemical action levels.

R18-9-D823. Permit Suspension, Revocation, Denial, or Termination

A. The Director may, after notice and opportunity for hearing, suspend or revoke an AWP permit or demonstration permit upon a determination of any of the following:

1. The AWPRA failed to comply with any applicable provision of this Title or any permit condition;

2. The AWPRA misrepresented or omitted a fact, information, or data related to an AWP permit application or permit condition;

3. A permitted activity is causing or will cause a violation of the Safe Drinking Water Act or any requirement of this Article at the entry point to a distribution system for delivery to drinking water consumers;

4. A permitted AWP facility is causing or will cause imminent and substantial endangerment to public health or the environment;

5. The AWPRA failed to maintain the financial capability pursuant to R18-9-F833; or

6. The AWPRA failed to construct a facility within five years of permit issuance.

B. The Director may deny an AWP permit or demonstration permit upon a determination that the AWPRA applicant has:

1. Failed or refused to correct a deficiency in the permit application;

2. Failed to demonstrate that the facility and the operation will comply with the requirements of this Article and all applicable requirements in Chapter 4 and Chapter 5 of this Title. The Director shall base this determination on:

a. The information submitted in the AWP permit application;

b. Any information submitted to the Department following a public hearing; or

c. Any relevant information that is developed or acquired by the Department; or

3. Provided false or misleading information.

C. The Director may terminate an AWP permit or AWP demonstration permit if the AWP project covered under the permit:

1. Is in substantial non-compliance with this Article or the Safe Drinking Water Act such that the continued operation of the facility presents a risk to public health or public safety that cannot be sufficiently abated or addressed through other enforcement mechanisms available to the Department under this Article;

2. Is determined to have provided false information to the Department, or certified false or misleading reports;

3. Is abandoned or no longer actively distributing or producing water under an AWP permit or demonstration permit; or

4. At the permit holder's request upon prior notification to the Department.

PART E. CONSTITUENT CONTROL, MONITORING, AND REPORTING

R18-9-E824. Enhanced Source Control

A. Treated wastewater used to supply an AWP project shall originate from a water reclamation facility that has local authority to implement an enhanced source control program, including authority for oversight, enforcement, and inspection.

B. An AWPRA applicant shall develop, and an AWPRA permittee shall maintain, a locally authorized enhanced source control program which shall:

1. Operate pursuant to specific legal authority enforceable in State or local courts, including the ability to file civil and/or criminal complaints for program violations,

2. Identify, control, or eliminate constituents of concern discharged into the collection systems through the use of constituents of concern control methods including local ordinances and local limits,
3. Include a summary of local limits and other discharge control methods,
4. Include a list of potentially impactful non-domestic dischargers in the service area,
    a. A potentially impactful non-domestic discharger is a source that meets one or more of the following:
        i. The source is subject to the National Pretreatment Program pretreatment standards;
        ii. The source may adversely affect the AWTF operation including pass-through or interference;
        iii. The source has a potential to have serious adverse effects on public health;
        iv. The source has a potential to prevent the AWPRA from achieving requisite treatment standards for any contaminant regulated under this Article;
        v. The source has a potential to cause a violation of a Tier 1 standard; or
        vi. The source has otherwise been designated as potentially impactful by the water reclamation facility.
    b. The potentially impactful non-domestic discharger list shall be:
        i. Utilized to generate a list of impactful non-domestic dischargers, subject to additional control measures, in accordance with subsection (C) of this section,
        ii. Reported to ADEQ every year through the annual report prepared pursuant to R18-9-E831,
        iii. Continuously updated with newly introduced chemicals or new potentially impactful non-domestic dischargers, or as a result of any other event that causes a change within the collection systems impacting the advanced treated water quality,
        iv. Verified through open and ongoing communication, as well as routine site visits with the identified potentially impactful non-domestic discharger. Verification may include inquiry into chemical use, potential discharges, and any potential or planned changes in operation that could impact the advanced treated water quality, and
        v. Accompanied by collection system investigations to identify sources of Tier 1 or Tier 2 chemical peaks that have a significant impact on advanced treated water quality. These investigations shall occur at all necessary sewer lines, manholes, force mains, lift stations, and other collection system components.
5. Include a map of the collection system components, which shall be submitted to the Department and shall include locations of the potentially impactful non-domestic discharges in the collection system,
6. Include a list of all water reclamation facilities in the collection system that provide treated wastewater to the AWPRA as a source under the AWP program along with a description or map of their respective boundaries,

7. Include activities that protect the water reclamation facility(s) and AWTF(s) from pass-through or interference from constituents of concern which may include, but are not limited to, the creation of additional local limits or addressing routine monitoring activities,

8. Include a pollutant reduction and elimination plan that addresses both non-domestic and domestic dischargers with the goal of mitigating or eliminating constituents of concern prior to entry into the collection system. The plan shall inclde, at a minimum, the following:

    a. A determination of whether targeted outreach is necessary. If necessary, targeted outreach shall include the development of targeted outreach programs for non-domestic dischargers determined to be impactful in accordance with subsection (C)(2) of this section,

    b. Education and encouragement of non-domestic dischargers determined to not be impactful in accordance with subsection (C)(2) of this section to participate in pollution prevention programs or environmental stewardship programs that reduce or eliminate the discharge of constituents of concern into the collection system, including the requirement to consider alternatives to constituent of concern usage,

    c. A public outreach program for domestic dischargers, and

    d. Notification and public hearings on the AWP program and significant program developments,

9. Include a septage hauler control program that tracks and monitors loads and includes a load sampling program which shall retain all load sampling results for a minimum of five years,

10. Implement a program to receive early warning for the purpose of attaining advanced notice of an incoming constituents of concern peak. An early warning system shall include, at a minimum, the following:

    a. Online monitoring instrumentation that evaluate data in real time located either in the influent to the water reclamation facility, in the collection system, or at the discharging entity that measures constituents of concern or surrogate parameter(s) and that indicates potential treatment interference, pass-through, or a violation of an AWP action level,

    b. A process for notification to the AWPRA of any discharge that can potentially result in the release of contaminants above local limits established pursuant to subsection (B)(3) of this section,

    c. Cooperation with local county public health departments, as necessary, to track constituents of concern peaks from disease outbreaks or other impactful health events,

    d. A response plan developed pursuant to subsection (B)(12) of this section,

    e. A plan for routine calibration of early warning system equipment with the goal of reliable performance,

    f. A plan for rapid response and addressing of equipment failure, and

g. Other early warning measures required by the Department, which are necessary to protect the operations of the AWPRA project treatment or prevent contamination of the advanced treated water, based on a review of application components submitted to the Department for review, and on the availability of such measures,

11. Be audited at least every five years by an independent party to assess the effectiveness of the enhanced source control program in controlling the discharge of contaminants,

12. Include a clear and comprehensive response plan to address constituents of concern exceedances. The response plan shall be created in partnership with all relevant AWPRA partners. The plan shall include, at a minimum, the following:

a. A procedure for addressing constituents of concern peaks with the potential to impact advanced treated water quality,

b. An investigation and identification of the exceedance source, or if no source is identified, the initiation of a collection system sampling program,

c. The designation of the leading facility responsible for communication with the AWPRA partners,

d. A procedure for when and how to notify the Department upon a constituent of concern exceedance,

e. A procedure for the bypass and/or shutdown of the AWTF, if necessary,

f. An effective training program ensuring the understanding of the response plan by the responsible personnel,

g. A review of the operation and calibration records for online meters and any relevant analytical methods upon the detection of a constituent of concern exceedance, and

h. Submission of a memorandum of understanding or other contractual agreement between all entities necessary to effectuate the response plan, and

13. Prohibit the discharge of any of the following to the water reclamation facility:

a. Pollutants which create a fire or explosion hazard, including, but not limited to, waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR Part 261.21,

b. Pollutants which will cause corrosive structural damage including discharges with a pH lower than 5.0, unless the treatment works are designed to accommodate such discharges.

c. Solid or viscous pollutants in amounts which will cause obstruction to the flow resulting in interference,

d. Any pollutant, including oxygen demanding pollutants (biochemical oxygen demand, etc.) released in a discharge at a flow rate and/or pollutant concentration which will cause Interference,

e. Heat in amounts which will inhibit biological activity resulting in interference including heat in such quantities that the temperature at the water reclamation facility exceeds 40 °C (104 °F), unless the approval authority, upon request of the water reclamation facility, approves alternate temperature limits,

f. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass-through,

g. Pollutants which result in the presence of toxic gas, vapors, or fumes in a quantity that may cause acute worker health and safety problems, and

h. Any trucked or hauled pollutants, except at discharge points designated by the water reclamation facility, and

14. Include local authority for the AWPRA to take the following actions to determine compliance of a potentially impactful non-domestic discharger with a local ordinance:

a. Receive and analyze all self-monitoring reports and notices submitted by potentially impactful non-domestic dischargers,

b. Randomly sample and analyze effluent from potentially impactful non-domestic dischargers and conduct surveillance and inspection activities needed to identify, independent of any information supplied by such users, occasional or continuing noncompliance with any local limit or requirement, and

c. Investigate instances of noncompliance with any enhanced source control ordinance when notice of any actual or probable noncompliance has been received by the AWPRA, and

15. Report all program elements in this subsection to the Department annually, pursuant to R18-9-E831, and

16. Include any other relevant information required by the Department.

C. Impactful Non-Domestic Dischargers List.

1. From the potentially impactful non-domestic dischargers list developed in subsection (B)(4) of this section, the AWPRA applicant shall develop a list of impactful non-domestic dischargers by conducting a significant impact analysis for each potentially impactful non-domestic discharger that considers, but is not limited to, the following factors:

a. Average wastewater discharged into the collection system,

b. Dilution of discharge within the collection system,

c. The nature of the discharge and its constituents,

d. The ability of downstream treatment processes to address the discharge, and

e. The effect the discharge will have on treatment processes and advanced treated water.

2. The AWPRA permittee shall subject the identified impactful non-domestic dischargers in the collection system to additional control measures including, but not limited to:

a. Locally established discharge limits,

b. Locally established monitoring, and

c. Targeted outreach.

3. The list shall be reported to ADEQ every year through the annual report prepared pursuant to R18-9-E831.

D. In addition to the requirements of this section, an enhanced source control program shall be developed, conducted, and maintained using good engineering practices. Methods for developing, conducting, and maintaining an enhanced source control program shall be approved if the AWPRA applicant can demonstrate that the methods are sufficiently detailed and robust for the purpose of enhanced source control, pursuant to this Article.

1. ADEQ shall develop and make available guidance on developing, conducting, and maintaining an enhanced source control program.
2. An enhanced source control program developed, conducted, and maintained in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.

E. An AWPRA shall form and maintain a source control committee that includes representatives from each AWPRA partner that supplies treated wastewater to the AWP project or that owns and/or operates a water reclamation facility that provides treatment, as well as representatives from key non-domestic dischargers and others that discharge to the collection system chemicals that may pose a risk to public health.

R18-9-E825. Tier 1 Chemical Control; Maximum Contaminant Levels

For the purposes of this Article, Tier 1 chemicals are the chemical contaminants that have "Primary Drinking Water Standards" under 40 CFR Part 141 (published July 1, 2023), including those with Safe Drinking Water Act-required Maximum Contaminant Levels or Treatment Techniques.

R18-9-E826. Tier 2 Chemical Control; Advanced Water Purification-Specific Chemicals

A. An AWPRA shall conduct a Tier 2 analysis under this section in order to determine Tier 2 chemicals, propose alert and action levels for Tier 2 chemicals at the AWTF, and to identify the chemical controls necessary to be implemented by the AWPRA in the following manner:

1. An AWPRA applicant shall conduct the analysis as a required technical component of their permit application for an AWP permit or an AWP demonstration permit, pursuant to R18-9-C816 and R18-9-C817, respectively.
2. Once permitted, an AWPRA shall conduct a new Tier 2 analysis under this section:
   a. If the AWPRA is aware of, becomes aware of, or should reasonably be aware of:
      i. The identification of additional potentially impactful non-domestic dischargers pursuant to R18-9-E824(B)(4); or

ii. Significant volumetric adjustments to an AWPRA water reclamation facility's total daily volume of treated wastewater that are likely to impact the expected concentration of any chemical pursuant to subsection (D) of this section; or

b. If changes to any component of the permitted AWP project occur that will result in an exceedance of an action level; or

c. At a minimum, every five years as a component of a permit renewal application pursuant to R18-9-D822.

B. Non-Domestic Dischargers List. The AWPRA applicant shall list all non-domestic dischargers in the collection system that are a direct or indirect source to an AWPRA water reclamation facility.

C. Chemical Inventory List. The AWPRA applicant shall generate a list of chemicals that are used, stored or discharged by all non-domestic dischargers in the list from subsection (B) above. The AWPRA applicant shall add chemicals used at the water reclamation facility and the AWTF to the chemical inventory list.

D. Tier 2 Analysis. The AWPRA applicant shall conduct the following analysis for each chemical identified in the Chemical Inventory List in subsection (C) above:

1. Calculate the projected daily load for each chemical in the inventory list generated in subsection (C) for each non-domestic discharger in the list generated in subsection (B) as follows: Mass loading of contaminant (lb/day) = Flow (MGD) x Maximum Concentration (mg/L) x 8.34 (for unit conversion);
2. Calculate the projected total daily load of each chemical in the inventory list generated in subsection (C) for all non-domestic dischargers in the list generated in subsection (B), cumulatively, as follows: Total Contaminant Load (lb/day) = ∑ Mass loading (lb/day) for all dischargers;
3. Calculate the projected daily concentration of each chemical in the chemical inventory list in the treated wastewater by comparing the collection system's projected total daily load from subsection (D)(2) for each chemical in the chemical inventory list against the total influent flow of treated wastewater at the headworks of the proposed AWTF using the following formula:

$$Expected\ concentration\ (mg/L) = \frac{Total\ Contaminant\ Load\ (\frac{lb}{day})}{Total\ Influent\ Flow\ (MGD) \times 8.34}$$

4. For chemicals with one or more of the corresponding health advisory values in subsections (a)(i) through (v) below established in the "2018 Edition of the Drinking Water Standards and Health Advisories Tables":
   a. Compare the projected daily concentration of each applicable chemical calculated in subsection (D)(3) with the lowest health advisory value, from the following available values:
      i. One-day (mg/L)
      ii. Ten-day (mg/L)

iii. DWEL (mg/L)

iv. Life-time (mg/L)

v. mg/L at 10^{-4} Cancer Risk.

b. If the projected daily concentration exceeds the health advisory value, the chemical shall be a Tier 2 chemical.

5. For chemicals that do not have an established health advisory pursuant to subsection (D)(4) above but do have a drinking water health advisory "notification level" in another state's drinking water program:

a. Compare the projected daily concentration of each applicable chemical calculated in subsection (D)(3) with the following corresponding state drinking water health advisory notification level: Trimethylbenzene (1,2,4-) (CAS No. 95-63-6): 0.33 mg/L.

b. If the projected daily concentration exceeds the health advisory notification level, the chemical shall be a Tier 2 chemical.

6. For chemicals that do not have an established health advisory pursuant to subsection (D)(4) above, nor a notification level in another state's drinking water program pursuant to subsection (D)(5) above:

a. Compare the projected daily concentration of each applicable chemical calculated in subsection (D)(3) with the corresponding Departmental health advisory value listed below:

i. Benz[a]anthracene (CAS No. 56-55-3): 0.06 mg/L

ii. Benzo[b]fluoranthene (CAS No. 205-99-2): 0.06 mg/L

iii. Benzo[g,h,i]perylene (CAS No. 191-24-2): 0.00001 mg/L

iv. Benzo[k]fluoranthene (CAS No. 205-99-2): 0.005 mg/L

v. Chrysene (CAS No. 218-01-9): 6 mg/L

vi. Dimethyl phthalate (CAS No. 131-11-3): 0.001 mg/L

vii. Indeno[1,2,3,-c,d]pyrene (CAS No. 193-39-5): 0.06 mg/L

viii. Phenanthrene (CAS No. 85-01-8): 0.0002 mg/L.

b. If the projected daily concentration exceeds the Departmental health advisory value, the chemical shall be a Tier 2 chemical for ongoing monitoring purposes pursuant to R18-9-E829, but shall be exempt from all compliance requirements under R18-9-E829(D) and the Projected Chemical Treatment List in subsection (F) below.

7. For chemicals that do not have an established health advisory pursuant to subsection (D)(4) above, nor a notification level in another state's drinking water program pursuant to subsection (D)(5) above, nor a Departmental health advisory value pursuant to subsection (D)(6) above, but do have a Reference Dose (RfD) or Cancer Slope Factor (CSF) in credible peer-reviewed literature or state or Federal databases:

a. Consult with the Department and/or the Project Advisory Committee to determine a health advisory value.

b. Compare the projected daily concentration of each applicable chemical calculated in subsection (D)(3) with the corresponding health advisory determined in subsection (D)(7)(a) above.

c. If the projected daily concentration exceeds the health advisory determined in subsection (D)(7)(a), the chemical shall be a Tier 2 chemical.

8. For chemicals that do not have an established health advisory pursuant to subsection (D)(4) above, nor a notification level in another state's drinking water program pursuant to subsection (D)(5) above, nor a Departmental health advisory value pursuant to subsection (D)(6) above, nor a health advisory determined pursuant to subsection (D)(7) above:

a. An AWPRA applicant shall consult with the Department and/or the Project Advisory Committee to determine the health risk of the chemical through reasonably appropriate bioanalytical studies and/or bioassays.

b. If the health risk in subsection (D)(8)(a) above is determined to be significant, the chemical shall be a Tier 2 chemical.

c. If the bioanalytical studies and/or bioassays conducted in subsection (D)(8)(a) above are indeterminate, the chemical shall be removed through measures adopted by the AWPRA in its enhanced source control program pursuant to R18-9-E824.

9. Action Levels. An AWPRA applicant shall calculate and submit to the Department an action level for each Tier 2 chemical.

a. The action level for the Tier 2 chemicals established under subsection (D)(4) shall be set at the same value as the lowest applicable health advisory value in the "2018 Edition of the Drinking Water Standards and Health Advisories Tables", below:

i. One-day (mg/L)

ii. Ten-day (mg/L)

iii. DWEL (mg/L)

iv. Life-time (mg/L)

v. mg/L at 10-4 Cancer Risk.

b. The action level for the Tier 2 chemicals established under subsection (D)(5) shall be set at the same value as the corresponding health advisory notification level in subsection (D)(5)(a).

c. The action level for the Tier 2 chemicals established under subsection (D)(7) shall be set at the same value as the corresponding health advisory determined in subsection (D)(7)(a).

d. The action level for the Tier 2 chemicals established under subsection (D)(8) shall be set at a value that is reasonably protective of human health, reasonably utilizing the results of the bioanalytical studies or bioassays.

E. Pass-Through or Interference Chemical List. The AWPRA applicant shall analyze the chemical inventory list in subsection (C) in order to identify chemicals that are known to or expected to pass-through or interfere with AWTF treatment processes. The AWPRA applicant shall generate a list to be used in subsection (F).

F. Projected Chemical Treatment List. Based on the Tier 1 MCLs, the Tier 2 chemicals identified in subsection (D)(4), (5), (7) and (8), and the pass-through or interference chemical list generated in subsection (E), the AWPRA applicant shall select an optimized pilot and full-scale AWTF treatment train and compile a list of chemicals that are projected to be treated by the selected treatment train.

1. During the pilot study, pursuant to R18-9-C815, the AWPRA applicant shall demonstrate chemical control of all chemicals on the Projected Chemical Treatment List through treatment at the pilot treatment train.
2. All chemicals that are not able to be controlled through treatment at the pilot or full-scale AWTF shall be controlled through measures adopted by the AWPRA in its enhanced source control program pursuant to R18-9-E824. The selected control measures shall be submitted to the Department along with the Enhanced Source Control Plan pursuant to R18-9-C816 and R18-9-C817.

G. An AWPRA shall maintain the lists of chemicals identified under subsections (C) and (E) and, if a new Tier 2 analysis conducted under subsection (D) results in a modification to any component of the AWP project, the AWPRA shall request an amendment to their AWP permit pursuant to R18-9-D821.

R18-9-E827. Tier 3 Chemical Control; Performance-Based Indicators

A. An AWPRA applicant shall identify Tier 3 chemicals for the purpose of monitoring the efficacy of reduction by a treatment component at the pilot and full-scale treatment trains or to provide an indication of a process's failure.

B. Tier 3 chemicals are composed of performance-based indicators which the AWPRA applicant shall select based on the requirements of this section.

1. The AWPRA applicant shall monitor each performance-based indicator and demonstrate chemical removal for all selected treatment components in the treatment train.
2. Performance based indicators may be grouped under a surrogate such that the AWPRA applicant may monitor removal of that surrogate in place of performance-based indicators if the following requirements are met:
   a. All performance-based indicators in the group share similar properties such that removal of the surrogate is adequately representative of every performance-based indicator in that group, and
   b. The AWPRA applicant demonstrates that the surrogate is directly correlated to the concentration of a performance-based indicator.

C. Performance based indicators. Each performance-based indicator shall be selected from pre-existing chemicals identified in the treated wastewater either through the Initial Source Water Characterization report pursuant to R18-9-C814(E) or shall otherwise be introduced by the AWPRA applicant.

1. Pre-Existing. Performance based indicators selected from pre-existing chemicals identified in the treated wastewater shall be selected in accordance with, but not limited to, the following criteria:
    a. Concentration. To demonstrate adequate percentage of removal, a performance-based indicator shall have a median concentration at least five times greater than its method reporting limit, measured as the detection ratio.
    b. Prevalence. To adequately reflect treatment efficacy, the performance-based indicator shall have a consistent detection frequency of greater than 80% in the treated wastewater.
    c. Measurability. Measurements demonstrating concentration and prevalence pursuant to subsections (C)(1)(a) and (b) of this section shall be made in accordance with established and appropriate analytical methods that are sufficiently precise and sensitive.
    d. Specificity. The performance-based indicator shall be removable by the targeted treatment process(es) it is intended to monitor and shall meet the prevalence and concentration criteria at the influent of the targeted treatment process pursuant to subsections (C)(1)(a) and (b) of this section.
    e. Sensitivity. The performance-based indicator shall be sufficiently sensitive such that the targeted treatment process achieves at least 75% removal when functioning as designed.
    f. Diversity. For all performance-based indicators selected from pre-existing chemicals, the AWPRA applicant shall demonstrate the following:
        i. Each chemical treatment process is monitored by at least one performance-based indicator, and
        ii. The treatment train as a whole is monitored by at least one performance-based indicator which is partially removed by each treatment process, but only removed to at least 75% if all treatment processes are functioning as intended.
2. Introduced. If no pre-existing chemicals are relevant as a performance-based indicator for a specific treatment process, the AWPRA applicant shall introduce a performance-based indicator for the purpose of testing the selected treatment process for requisite chemical removal in compliance with this section. For each introduced performance-based indicator an AWPRA applicant shall:
    a. Reasonably demonstrate the selected treatment process performance, and
    b. Include an established procedure for introduction into the treatment train.

D. Critical Control Points. For each performance-based indicator, the AWPRA applicant shall designate critical control points where monitoring will occur in the pilot treatment train to indicate individual process performance. The AWPRA applicant may propose critical control points at only the treatment train influent and effluent points if all performance-based indicators are demonstrated to be sufficiently recalcitrant to upstream and downstream processes.

E. An AWPRA applicant shall include an initial Tier 3 chemical list along with proposed critical control points as a component of the Pilot Study Plan prepared pursuant to R18-9-C815.

F. In addition to the requirements of this section, the Tier 3 chemical list compilation and monitoring shall be conducted using good engineering practices. Other methods for generating, designing, and conducting Tier 3 chemicals and monitoring shall be approved if the AWPRA applicant can demonstrate that the alternative methods are sufficiently detailed and robust for the purpose of monitoring the efficacy of reduction by a treatment process at the pilot or full-scale treatment train, or providing an indication of process failure.

1. ADEQ shall develop and make available guidance on Tier 3 chemical list compilation and monitoring.
2. A Tier 3 chemical list compiled and monitored in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.

R18-9-E828. Pathogen Control

A. The AWP project shall be designed and constructed to achieve pathogen reduction by following the prescribed methods to determine log reduction values for enteric viruses, Giardia lamblia cysts, and Cryptosporidium oocysts, also referred to collectively as reference pathogens, as outlined in either subsection (B) or (C) of this section.

B. Standard Log Reduction. An AWPRA applicant choosing the standard log reduction approach shall design the AWP project to achieve the following cumulative validated treatment values from raw wastewater to finished water:

1. 13 log reduction for enteric viruses,
2. 10 log reduction for Giardia lamblia cysts, and
3. 10 log reduction for Cryptosporidium oocysts.

C. Site-Specific Log Reduction. An AWPRA applicant choosing a site-specific log reduction approach shall design the AWP project based on cumulative validated treatment values determined through reference pathogen monitoring pursuant to R18-9-C814(C)(3)(c) and the following:

1. Site-specific pathogen monitoring for the reference pathogens shall be conducted over a period of at least 24 months and shall include, at a minimum:
   a. One month of initial composite sampling consistent with the following requirements:
      i. One sample taken daily, and
      ii. The samples obtained in subsection (C)(1)(a)(i) shall be used, at the end of the first month, to identify the day of the week that yields the highest pathogen density.
   b. At least 23 months of pathogen monitoring consistent with the following requirements:

i. One sample taken per month at the same day of the week throughout the sampling period as established in subsection (C)(1)(a), and

ii. The sample obtained in subsection (C)(1)(b)(i) shall be taken consistently during the same week each month.

2. Any missed sample collected under subsections (C)(1)(a) or (b) of this section shall result in an extension of the sampling period by another week or month as appropriate pursuant to R18-9-A802(C), and cannot be replaced with a sample from a different day,

3. Sampling shall occur at a location in the water reclamation facility treatment train before the first disinfection treatment process and before treated wastewater transference to the AWTF,

4. Sample results below method reporting limit shall be reported at the method reporting limit of the analytical instrument for characterization calculations and be flagged as such,

5. Non-detects from laboratory analysis must be demonstrated with a large sample volume analysis,

6. An AWPRA applicant shall have a cumulative validated treatment of not less than 8 log for enteric viruses, 6 log for Giardia lamblia cysts, and 5.5 log for Cryptosporidium oocysts even if non-detects are demonstrated by the sampling program,

7. The highest sample concentration for each reference pathogen shall be used to calculate the required log removal targets,

8. Norovirus shall be used as the representative enteric virus for baseline virus enumeration.

a. The AWPRA applicant shall utilize either qPCR or culture methods for analysis,

b. All corresponding recovery-corrected data shall be documented for review, and

c. The results shall be documented for review with accompanying quality assurance and quality control, and

9. Laboratory analysis of samples collected pursuant to this section shall follow EPA qPCR or Culture Methods 1623.1, "Cryptosporidium and Giardia in Water by Filtration/IMS/FA" and 1615 "Measurement of Enterovirus and Norovirus Occurrence in Water by Culture and RT-qPCR" for Giardia lamblia cysts, Cryptosporidium oocysts and Norovirus. In addition, laboratories using these methods are required to follow general requirements and recommendations for quality assurance and quality control procedures in Section 9020, "Quality Assurance/Quality Control" of the Standard Methods For The Examination of Water and Wastewater, 24th Edition.

D. Critical Control Points. For each reference pathogen, the AWPRA applicant shall designate critical control points where monitoring will occur in the pilot plant and the full-scale plant in order to assess individual process performance.

1. Critical control point designation shall be accompanied by a comprehensive plan for monitoring and reporting, including, but not limited to, the following elements:

a. Type of monitoring (i.e. online monitoring, continuous monitoring, grab samples, etc.),

b. Frequency of monitoring (i.e. 15-minute, hourly, daily, weekly, etc.),

c. Instantaneous flow rate and flow totalizing capability for the purpose of calculating residence times and responses,

d. Demonstrated operational parameters confirming the treatment barriers are intact such as to ensure the process is meeting the water quality parameters and pathogen removal goals, and

e. A list of the identified action levels and alert limits, accompanied by the corresponding responses for all critical control points, pursuant to R18-9-F836.

2. Critical control point monitoring shall occur at all validated treatment process locations.

3. The AWPRA applicant shall document the critical control point methods and the following elements as components of the Operations Plan prepared pursuant to R18-9-F836:

a. All delay times from the pathogen sampling time, instrument analysis time, operator response time, as well as anticipated time to respond to a failure, and

b. Automated shutdown procedures based on pathogen critical control point failure, along with a description of shutdown sequences, procedures, and timing.

E. In addition to the requirements of this section, the pathogen monitoring shall be designed and conducted using good engineering practices. Methods for designing and conducting pathogen monitoring shall be approved if the AWPRA applicant can demonstrate they are sufficiently detailed and robust for the purpose of characterizing pathogens in a treated wastewater source.

1. ADEQ shall develop and make available guidance on designing and conducting pathogen monitoring.

2. Pathogen monitoring designed and conducted in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.

R18-9-E829. Ongoing Monitoring Requirements

A. The AWPRA shall perform ongoing monitoring in compliance with the requirements of this section, and shall:

1. Assure compliance with both pathogen control log reduction targets and chemical control limits for Tier 1, Tier 2, and Tier 3 at the AWTF treated wastewater influent and the advanced treated water effluent,

2. Assure continued process performance at critical control points,

3. Perform sampling on the advanced treated water prior to delivery pursuant to this section, and

4. Perform additional sampling as necessary on the finished water prior to distribution pursuant to the requirements of the Safe Drinking Water Act.

B. Pathogen Control Monitoring. An AWPRA shall monitor in a manner proposed by the AWPRA and approved by the Director pursuant to R18-9-E828(D).

C. Tier 1 Chemical Control Monitoring.

1. The AWPRA shall monitor for all Tier 1 chemicals at a quarterly interval, except for Nitrite and Nitrate as Nitrogen and TOC, which shall be monitored pursuant to subsection (F) and R18-9-F834, respectively.
2. The AWPRA shall conduct Tier 1 monitoring at two locations relative to the AWTF:
    a. The treated wastewater, and
    b. The advanced treated water.
3. Violations of Tier 1 chemicals, except for TOC and Nitrogen, are the corresponding Safe Drinking Water Act-MCL values in the advanced treated water.
4. Nothing in this section exempts the AWPRA from applicable Safe Drinking Water Act monitoring requirements.

D. Tier 2 Chemical Control Monitoring.

1. The AWPRA shall monitor for all Tier 2 chemicals monthly.
2. The AWPRA shall conduct Tier 2 monitoring at two locations relative to the AWTF:
    a. The treated wastewater, and
    b. The advanced treated water.
3. Compliance monitoring for Tier 2 chemicals occurs at the advanced treated water.
4. If a monitoring result for a Tier 2 chemical indicates an exceedance of an action level, the AWPRA shall collect a confirmation sample within 24 hours of the exceedance.
5. A Tier 2 action level is violated when the average of the initial sample and the confirmation sample exceeds the action level. Upon a violation, an AWPRA shall notify the Department and conduct any required response procedures pursuant to reporting under R18-9-E830, the Operations Plan under R18-9-F836 and subsections (D)(6) - (D)(9) of this section.
6. Basic Response Procedure. Upon a violation as described in subsection (D)(5), and with the goal of reducing the concentration of the exceeded chemical to a level below the action level, the AWPRA shall:
    a. Increase the monitoring frequency of the chemical to weekly, and
    b. Initiate an investigation of the source of the chemical, the cause of the elevated result, and the efficacy of the treatment process(es).
7. An AWPRA shall conduct the corresponding advanced response procedure in subsection (D)(8) of this section if either of the following two results occur:
    a. A Tier 2 chemical with a non-cancer toxicological endpoint has a violation value of 10 times the action level; or
    b. A Tier 2 chemical considered to pose a cancer risk (corresponding to a lifetime cancer risk of $1x10^{-4}$) has a violation value of 100 times the action level.
8. Advanced Response Procedure.

a. Under subsection (D)(7)(a) of this section, an AWPRA shall:

i. Notify ADEQ within 24 hours of the notification of the result, and

ii. Report the detection in the applicable public water system's annual consumer confidence report.

b. Under subsection (D)(7)(b) of this section, an AWPRA shall:

i. Cease delivery of advanced treated water immediately,

ii. Notify ADEQ within 24 hours of the notification of the result,

iii. Provide public notification if advanced treated water with those exceedances was distributed (if diverted, public notice is not required),

iv. Report the result in the applicable public water system's annual consumer confidence report,

v. Upon returning the advanced treated water to distribution, utilize treatment or blending to meet the chemical's action level, and

vi. Propose corrective actions, such as rectifying changes to the treatment and operations of the AWTF, or installing new control measures for the treated wastewater source.

9. Reduced Monitoring Frequency Criteria. ADEQ may allow a decrease in the Tier 2 sampling frequency from monthly to quarterly, based on a review of the most recent two years of monthly analytical results showing that a chemical has not been detected.

a. The monitoring frequency may be decreased from quarterly to annually following ADEQ approval, based on a review of the most recent three years of quarterly analytical results showing the chemical has not been detected.

b. The monitoring frequency may be reverted to prior intervals at the Department's discretion.

E. Tier 3 Chemical Control Monitoring. The AWPRA shall monitor for all Tier 3 chemicals at the designated critical control points in the manner and timeframes proposed by AWPRA and approved by the Director pursuant to R18-9-E827 and R18-9-F836.

F. Ammonia and Nitrite and Nitrate as Nitrogen.

1. The AWPRA shall monitor for Ammonia and Nitrite and Nitrate as Nitrogen using continuous online analyzers.

2. The AWPRA shall conduct Ammonia, Nitrite and Nitrate monitoring at two locations relative to the AWTF:

a. The treated wastewater influent, and

b. The advanced treated water effluent.

3. The AWPRA shall demonstrate that all Ammonia has been removed at the advanced treated water effluent.

4. The AWPRA shall operate the facility in such a manner that:

a. Nitrite measured as nitrogen does not exceed 1 mg/L at the advanced treated water location daily on an absolute basis, and

b. Nitrate measured as nitrogen does not exceed 10 mg/L at the advanced treated water location daily on an absolute basis.

5. Any exceedance of 1 mg/L of nitrite and 10 mg/L of nitrate on an absolute basis, measured as Nitrogen daily, requires a public notification pursuant to A.A.C. R18-4-119.

G. Total Organic Carbon Monitoring. The AWPRA shall follow all TOC monitoring requirements established pursuant to R18-9-F834.

H. Water Reclamation Facility Operational Parameters.

1. The AWPRA applicant shall provide a list of water reclamation facility operational parameters and ranges that produced the AWTF treated wastewater influent water quality as components of:
   a. The Pilot Study Plan pursuant to R18-9-C815, and
   b. The AWP permit application pursuant to R18-9-C816.
2. At the water reclamation facility, the AWPRA shall monitor for the parameters identified in subsection (F) of this section and process control parameters.
3. Any significant change in the operational parameters or their ranges must be approved through a permit amendment pursuant to R18-9-D821. For the purposes of this subsection, "significant change" means any operational change that will result in a change to the treated wastewater.

I. In addition to the requirements of this section, ongoing monitoring shall be developed, proposed and conducted using best practices, proper sampling procedures, and reliable equipment. Similar monitoring program components shall be approved if the AWPRA can demonstrate that the method is sufficiently detailed and robust for the purpose of AWP ongoing monitoring pursuant to this Article.

1. ADEQ shall develop and make available guidance on AWP ongoing monitoring.
2. AWP ongoing monitoring conducted in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using best practices.

R18-9-E830. Reporting Requirements

A. An AWPRA shall conduct reporting pursuant to the applicable general reporting requirements throughout this Article and the specific reporting requirements in this section. The AWPRA shall submit reports to the Department, on a form prescribed by the Director and pursuant to relevant specifications in the permit, through an AWP online portal on the Department's website.

B. Pathogen Reporting.

1. An AWPRA shall report ongoing pathogen monitoring results monthly.
2. An ongoing pathogen monitoring report shall include, but is not limited to, the following:
   a. A summary of the overall treatment train pathogen log reduction value performance,

b. A summary of the individual treatment process performance monitoring data,

c. The date, duration, and cause of each occurrence of log reduction value performance below the selected reference pathogen approach log reduction values in either R18-9-E828(B) or (C),

d. A summary of excursions of operational parameters outside the Department approved operating envelope,

e. Submission of calibration records for instruments that monitor pathogen critical control points quarterly,

f. Dates and descriptions of major equipment and process failures and corrective actions, along with data confirming that the corrective actions did not impact the approved product water quality,

g. A summary of any water quality complaints and reports of gastrointestinal illness received from customers,

h. A summary of activities of the wastewater source control program to control pathogens, and

i. Investigation or incident reports regarding cross-connection.

3. An AWPRA shall report other applicable pathogen monitoring requirements in the time and manner set forth in the AWP permit and R18-9-E828.

C. Tier 1 Reporting.

1. An AWPRA shall report ongoing Tier 1 chemical monitoring results quarterly.

2. An ongoing Tier 1 Chemical report shall include, but is not limited to, the following:

a. A summary of the overall treatment train chemical control performance,

b. A summary of chemicals detected as a result of monitoring conducted pursuant to R18-9-E829,

c. Investigation or incident reports regarding cross-connection,

d. A summary of activities of the wastewater source control program to control chemicals,

e. Dates and descriptions of any major equipment and process failures and corrective actions, along with data confirming that the corrective actions did not impact the approved product water quality, and

f. A summary of individual treatment process performance monitoring data.

3. An AWPRA shall report other applicable Tier 1 chemical monitoring requirements in the time and manner set forth in the AWP permit and R18-9-E829.

4. Nothing in this section exempts the AWPRA from applicable Safe Drinking Water Act reporting requirements.

D. Tier 2 Reporting.

1. An AWPRA shall report Tier 2 chemical monitoring results monthly.

2. An ongoing Tier 2 chemical report shall include, but is not limited to, the following:

a. A summary of overall treatment train chemical control performance,

b. A summary of chemicals detected as a result of monitoring conducted pursuant to R18-9-E829,

c. Investigation or incident reports regarding cross-connection,

d. A summary of enhanced source control activities,

e. Dates and descriptions of major equipment and process failures and corrective actions, along with data confirming that the corrective actions did not impact the approved product water quality, and

f. A summary of individual treatment process performance monitoring data.

3. An AWPRA shall report other applicable Tier 2 chemical monitoring requirements in the time and manner set forth in the AWP permit and R18-9-E826.

E. Tier 3 Reporting. An AWPRA shall report Tier 3 chemical monitoring results in the time and manner set forth in the AWP permit and R18-9-E827.

F. Ammonia and Nitrite and Nitrate as Nitrogen Reporting.

1. An AWPRA shall report Ammonia and Nitrite and Nitrate as Nitrogen chemical monitoring results quarterly.

2. An ongoing Ammonia and Nitrite and Nitrate as Nitrogen report shall include, but is not limited to, the following:

a. A summary of overall treatment train nitrogen species control performance,

b. A summary of nitrogen species detected as a result of monitoring conducted pursuant to R18-9-E829,

c. Investigation or incident reports regarding cross-connection,

d. Dates and descriptions of major equipment and process failures and corrective actions, along with data confirming that the corrective actions did not impact the approved product water quality, and

e. A summary of individual treatment process performance monitoring data.

G. TOC Reporting. An AWPRA shall report TOC monitoring results quarterly in accordance with the selected TOC management approach pursuant to R18-9-F834.

H. Water Reclamation Facility Operational Parameters Reporting. An AWPRA shall report the water reclamation facility operational parameter monitoring results monthly pursuant to R18-9-F832.

R18-9-E831. Annual Report

A. An AWPRA shall submit an annual report to the Department, postmarked no later than March 30th.

B. The report shall include the following information from the previous calendar year:

1. A summary of the compliance status of the AWP permit and/or demonstration permit including:

a. A list of violation(s),

b. Any off-spec water diversions, shutdowns, or corrective action(s) taken along with data confirming that the corrective actions did not impact the approved product water quality,

c. Required sampling and monitoring activities at critical control points, and

d. All other related AWP permit or regulation compliance items.

2. Any expected change(s) in quantity and quality of the treated wastewater,

3. A summary of any operational or technical challenges in meeting advanced treated water quality standards,

4. Any expected treatment changes and the impact on subsequent unit processes in the treatment train and the advanced treated water,

5. A verification of all required maintenance performed at each critical control point and any other process equipment, including evidence of instrumentation calibration,

6. Enhanced source control components, pursuant to R18-9-E824, including:

a. A summary of all sampling activities conducted at the AWPRA facilities,

b. A summary of any event resulting in upset, interference, or pass-through at any AWPRA facility,

c. A report documenting a review of established local limits along with any subsequent updates or changes by the AWPRA,

d. An update of the potentially impactful non-domestic discharger list and the impactful non-domestic discharger lists,

e. A description of any challenges under the enhanced source control program, and any proposed program changes,

f. A list of impactful non-domestic dischargers in non-compliance and any corrective actions taken, along with data confirming that the corrective actions did not impact the approved product water quality,

g. All outreach activities conducted,

h. All completed staff training related to enhanced source control, the National Pretreatment Program, or operation or maintenance of an AWPRA facility,

i. A list of any corrective or enforcement actions taken by the AWPRA against an AWPRA partner, and

j. A list of events identified through the early warning system and the actions taken to mitigate those events, and

7. The AWTF's TOC management annual approach. This includes, if applicable, the results of the annual site-specific TOC approach, including the lower value of the two site-specific procedures, and the reestablished alert and action levels pursuant to R18-9-F834, and

8. Any other information necessary to assist the Department in assessing challenges to program implementation.

PART F. TECHNICAL AND OPERATIONAL REQUIREMENTS

R18-9-F832. Minimum Design Requirements

A. An AWPRA shall meet the minimum design criteria in this section in designing and constructing a pilot treatment train and a full-scale treatment train under an AWP project.

B. Pathogen Control.

1. Under an AWP project, treated wastewater shall receive continuous pathogen treatment prior to delivery or distribution.
2. Pathogen log reduction credits will only be assigned for treatment barriers.
3. A treatment train shall contain at least one validated filtration treatment process and one validated disinfection treatment process targeting each of the three reference pathogens.
4. Each treatment process shall be credited with a minimum validated pathogen log reduction of 0.5 log reduction value.
5. Each treatment process shall not be credited with more than 6 validated pathogen log reduction credits.
6. Each treatment process may receive pathogen log reduction credits for one or more pathogens.
7. The treatment train, cumulatively, shall meet or exceed either the standard or site-specific log reduction targets for each reference pathogen pursuant to R18-9-E828.
8. An AWPRA shall maintain a pathogen monitoring strategy, which includes approved performance monitoring for surrogates, in order to receive log reduction values for a treatment process.
9. Each treatment process used to meet the requirements in this section shall have the pathogen log reduction values validated for each reference pathogen.
    a. An AWPRA may use a validation study or a previously-approved validation study report, in accordance with the protocol elements in subsection (B)(10) of this section.
    b. A validation study protocol shall be prepared by a licensed Arizona engineer with experience in drinking water or wastewater treatment, specifically in evaluating pathogen control in public water supplies.
10. The validation study protocol shall:
    a. Identify the treatment mechanism(s) of pathogen reduction by each treatment process,
    b. Identify the pathogen(s) being addressed by the treatment process, or appropriate surrogate(s) for the pathogen(s), that are used in the validation study, which shall be the one(s) most resistant to the treatment mechanism(s),
    c. Ensure that the pathogen(s) or surrogate(s) for the pathogen(s) are present in the test water in concentrations sufficient to demonstrate a pathogen log reduction,
    d. Identify the factors that influence the pathogen reduction efficiency for the treatment mechanism(s) and includes at least:
        i. Feed water characteristics such as temperature and pH,
        ii. Hydraulic loading,

iii. Deterioration of components, and

iv. Integrity failure, and

e. Identify the surrogate and/or operational parameters that can be measured continuously and that will correlate with the reduction of the pathogen(s) or surrogate(s) for the pathogen(s),

f. Identify the validation methodology to demonstrate the pathogen log removal capability of the treatment process, which shall involve a challenge test to quantify the reduction of the target pathogen or appropriate surrogate while concurrently monitoring the operational parameters to determine an operating envelope,

g. Describe the method to collect and analyze data to formulate evidence-based conclusions,

h. Describe the method to determine the alert and action levels and the operational monitoring and control strategy,

i. Describe the method to be used to calculate the log reduction value for the treatment process for each pathogen such that the validated log reduction value shall not exceed that achieved by 95 percent of the challenge test results when the treatment process is operating in compliance with the alert and action levels, and

j. Identify the circumstances that would require a re-validation or additional on-site validation.

11. The treatment train shall be continuously operated to achieve the log reduction value targets using validated treatment log reduction values and must conform to the Operations Plan pursuant to R18-9-F836.

12. The treatment train shall include UV disinfection with a dose of at least 300 mJ per cm2.

13. The SCADA system shall identify process failure to meet the alert and action levels and shall automatically discontinue the delivery of water to any distribution system if the treatment train does not meet the minimum design log reduction value target.

14. Treatment processes that are credited with pathogen log reductions must be continuously tracked with a SCADA system utilizing online monitoring for surrogates and/or operational parameters.

15. The treatment train shall be operated to continuously in accordance with the Operations Plan pursuant to R18-9-F836 to achieve either the standard or site-specific pathogen reduction approaches pursuant to R18-9-E828.

16. Blending is not eligible to receive pathogen log reduction credit, nor validated treatment log reduction values.

C. Chemical Control.

1. Under an AWP project, treated wastewater shall receive continuous chemical treatment prior to delivery or distribution.

2. All treatment trains shall have at least three diverse and separate treatment processes, including, but not limited to:

a. An AOP that meets the requirements set forth in subsection (D)(4) of this section, and

b. A physical separation process.

3. Ozone/BAC processes shall be designed to provide no less than 1.0 log reduction of each of the following indicators: formaldehyde, acetone, carbamazepine, and sulfamethoxazole.

   a. The ozonation process shall be designed to provide a ratio of the applied ozone dose to the design feed water TOC concentration greater than 1.0. Alternative design ratios may be used if reduction of 1.0 log for the indicators carbamazepine, and sulfamethoxazole is demonstrated during the pilot as part of the design of the ozonation process.

   b. BAC shall be designed with an empty bed contact time of at least 15 minutes. Alternative times may be used if reduction of 1.0 log for the indicators formaldehyde and acetone is demonstrated during pilot scale as part of the design of the ozonation process.

   c. Both Ozone and the BAC processes must be individually validated at full-scale with the same level of removal for the four indicators listed in this subsection.

   d. At full-scale, the ozone/BAC process shall continually be monitored and recorded using surrogate and/or operational parameters with alert and action levels as approved under the Operations Plan, pursuant to R18-9-F836.

4. Each reverse osmosis membrane selected shall meet the criteria set forth in ASTM International, Designation D4194-23, "Standard Test Methods for Operating Characteristics of Reverse Osmosis and Nanofiltration Devices",

   a. For a reverse osmosis treatment process, an AWPRA shall propose the following elements in a plan submitted to the Department for approval in the permit application pursuant to R18-9-C816(A)(2)(d):

      i. Ongoing performance monitoring using at least one surrogate and/or operational parameter that is capable of being monitored and recorded continuously, and

      ii. Alarms indicating when the integrity of the reverse osmosis membrane has been compromised.

   b. The proposal shall identify:

      i. The chemical control point,

      ii. The surrogate(s) and/or operational parameter(s), and

      iii. The alert and action levels for the surrogate(s) and/or operational parameter(s) that indicate when the integrity has been compromised.

5. During full-scale operation of a reverse osmosis treatment process, the AWPRA shall:

   a. Continuously monitor and record the surrogate and/or operational parameter(s) that indicate when the integrity of the process has been compromised, and

   b. Record when the alert and action levels established are exceeded pursuant to R18-9-F836.

D. Other Requirements.

1. TOC Removal. An AWPRA shall select, achieve, and maintain an up-to-date TOC limit in the advanced treated water, along with the associated alert and action levels, pursuant to R18-9-F834(B) or (C).
2. Corrosion Control. An AWPRA shall establish corrosion control provisions in the design and operation of the AWTF in accordance with, but not limited to, the following requirements:
    a. Within six months of the introduction of advanced treated water as a new water source, or following any treatment changes at the AWTF affecting advanced treated water quality, an AWPRA shall control lead and copper pursuant to the requirements of A.A.C. R18-4-111,
    b. An AWPRA shall evaluate any anticipated corrosivity effects through corrosivity tests or evaluations which shall include, but are not limited to:
        i. Developing an understanding of factors affecting internal corrosion,
        ii. Determining the extent and magnitude of corrosion,
        iii. Assessing corrosion control alternatives,
        iv. Selecting a corrosion control strategy,
        v. Implementing a corrosion control program,
        vi. Monitoring the effectiveness of the corrosion control program, and
        vii. Optimizing the control program, if necessary, and
    c. The Department may require an AWPRA to conduct additional corrosivity-related water quality monitoring,
    d. In addition to the requirements of this section, corrosion control shall be conducted using good engineering practices. Methods for corrosion control shall be approved if the AWPRA can demonstrate that the measures meet or exceed the criteria in this subsection.
        i. ADEQ shall develop and make available guidance on conducting corrosion control.
        ii. Corrosion control conducted in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.
3. Nitrogen Management. An AWPRA shall choose one of the following three denitrification approaches:
    a. Water Reclamation Facility Approach. An AWPRA applicant reliably denitrifying at the water reclamation facility(s) shall include at least two critical control points to monitor ammonia, nitrate and nitrite:
        i. A critical control point at a designated, off-spec diversion point which is monitored using continuous online analyzers, and
        ii. A critical control point for monitoring the advanced treated water in order to verify compliance with the Nitrite and Nitrate as Nitrogen Tier 1 MCL pursuant to R18-9-E829.

b. AWTF Approach. An AWPRA applicant removing nitrogen species at the AWTF shall demonstrate nitrogen removal to the Nitrite and Nitrate as Nitrogen Tier 1 MCL pursuant to R18-9-E829 through an AWTF treatment process configuration, and shall include multiple critical control points:

i. A critical control point for monitoring ammonia, nitrite, and nitrate at the treated wastewater influent in order to assess the ongoing treatability within the treatment train,

ii. A critical control point located at each treatment barrier in the design responsible for the removal of ammonia (if applicable), nitrite, and nitrate, and

iii. A critical control point for monitoring the advanced treated water in order to verify compliance with the Nitrite and Nitrate as Nitrogen Tier 1 MCL pursuant to R18-9-E829.

c. Alternative Approach. An AWPRA applicant shall demonstrate a design approach that effectively and reliably removes nitrogen species for the purposes of treatment train viability and water quality compliance with applicable MCLs.

4. AOP Treatment Process. An AWPRA applicant shall include an AOP treatment process in their pilot and full-scale treatment trains. Demonstration of AOP performance shall be achieved through one of the following two methods:

a. 1,4-Dioxane Indicator. AOP shall be validated to demonstrate that AOP can reliably achieve no less than 0.5 log reduction of the 1,4-dioxane indicator. If 1,4-dioxane is used as the AOP performance benchmark, it shall be monitored as a Tier 3 performance based indicator with an associated action level pursuant to R18-9-E827; or

b. Alternative Compound Indicator. An AWPRA applicant may propose an alternative compound to 1,4-dioxane for AOP performance if the following criteria are met:

i. Alternative indicators shall demonstrate resistance to elimination through other treatment methods, including biological degradation, adsorption processes, Reverse Osmosis/Nanofiltration, and conventional oxidation techniques such as hypochlorite, chloramines, permanganate, or chlorine dioxide (e.g., 1,4-Dioxane),

ii. Each pilot study should involve spiking and measuring indicator compound removal. Spiking 1,4-Dioxane (i.e., reference compound) and calculating removal percentages to compare with other widely accepted compounds,

iii. In pilot testing, the final concentration of any indicator compound (post-AOP treatment) should exceed the minimum reporting limit,

iv. Operating conditions and critical monitoring parameter ranges from pilot testing shall be reported for Departmental verification and setting of monitoring parameter ranges,

v. An AWPRA applicant must identify AWTF-specific AOP challenges, such as the scavenging of hydroxyl radicals by carbonates, bicarbonates, nitrites, nitrate, bromides, Natural Organic Matter (NOM), pH and UV light absorption,

vi. If comprehensive pilot testing is not conducted (e.g., shorter timelines or limited scope), an AOP treatment process shall be demonstrated to achieve at least 0.5 log removal of 1,4-dioxane,

vii. Any process sequence proposed must be validated with a rigorous study, and

viii. Correlation with other trace organics that were considered in the study, "Considerations for Direct Potable Reuse Downstream of the Groundwater Recharge Advanced Water Treatment Facility", along with a demonstration of an equivalent removal value for each of the trace organics.

5. AOP Validation Study Report. An AWPRA shall compile an AOP Validation Study Report which identifies:

a. The critical control points and/or surrogate(s) and/or operational parameter(s), and

b. Alert and action levels for the surrogate(s) and/or operational parameter(s) that indicate whether the minimum 0.5 log 1,4-dioxane reduction design criterion is being met.

6. At least one surrogate and/or operational parameter shall be capable of being monitored and recorded continuously and have associated alarms that indicate when the AOP is not operating as designed.

7. Failure Response Time. An AWPRA applicant must provide detailed design calculations identifying failure response time and specific means used to address failure response time.

a. Factors include, but are not limited to:

i. Level and redundancy of online instrumentation,

ii. Sophistication and speed of automated alarm responses, and

iii. Availability of operators and their response time.

b. Mitigation measures include, but are not limited to, engineered storage buffers which, when used, must be sized adequately to hold off-spec water for a time period no shorter than the failure response time.

c. If an AWPRA applicant proposes a treatment train configuration that is not followed by an engineered storage buffer, the following is required:

i. Appropriate process control for water quality assurance,

ii. Managerial control for demand is present,

iii. An operational barrier for pathogen control and chemical peaks attenuation.

d. If an engineered storage buffer is proposed, an AWPRA applicant shall justify the volume selected and account for short circuiting.

8. A treatment process configuration shall be designed to meet the Tier 1 limits utilizing, as a source, either:
   a. The Tier 1 chemicals and concentrations pursuant to R18-9-C814(C)(2); or
   b. The treated wastewater.
9. Cross-Connection. An AWPRA applicant shall develop, and the AWPRA permittee shall implement, cross-connection control measures which include, but are not limited to:
   a. Cross-connection evaluations during design, construction, and operation of the AWTF,
   b. Cross-connection control surveys, initially within one year of commencing full-scale operation, and ongoing annually thereafter,
   c. Reporting of any cross-connection incidents identified during the cross-connection control surveys to the Department in the manner prescribed by the AWP permit, along with a detailed summary of the nature and cause of the problem, the resulting corrective actions taken, and data confirming that those corrective actions will not impact advanced treated water, and
   d. A plan describing how the SCADA system communicates and interoperates with the SCADA systems of all AWPRA facilities in the AWP project.
10. Method Detection Limit. When there is no reliable analytical method that is technically feasible to measure a contaminant at an established health advisory concentration pursuant to R18-9-E826(D), the health advisory value shall be set at the lowest Method Detection Limit of the corresponding and most sensitive EPA-approved method.

E. An AWPRA shall meet the following minimum design criteria in designing and operating a full-scale water reclamation facility that delivers treated wastewater to an AWTF:

1. An AWPRA water reclamation facility shall have secondary treatment that utilizes oxidation processes that remove biodegradable organic matter and suspended solids,
2. An AWPRA water reclamation facility shall meet discharge limit requirements for:
   a. Biological Oxygen Demand (BOD),
   b. Total Suspended Solids (TSS), and
   c. pH pursuant to subsection (B)(1) of R18-9-B204, and
3. An AWPRA water reclamation facility shall meet a minimum solids retention time (SRT) of 15 days. A reduction in SRT may be requested and approved by the Department if wastewater characterization demonstrates that over all seasons (represented by 12 monthly values) the proposed SRT is consistent with nitrogen reduction and COCs.

4. An AWPRA water reclamation facility shall meet the requirements for Total Nitrogen (TN) in the APP program. The TN requirements in R18-9-B204 shall be followed in order to discharge any treated wastewater or off-spec treated wastewater which cannot be supplied to the AWTF,

5. An AWPRA water reclamation facility shall be operated to produce treated wastewater of consistent quality in accordance with approved engineering design reports and the water reclamation facility operations plan. The AWPRA shall provide to the water reclamation facility a list of operational parameters, such pH, SRT, Hydraulic retention time (HRT), Dissolved Oxygen (DO), BOD, cBOD and others for the water reclamation facility.

F. In addition to the requirements of this section, treatment process configurations shall be designed using good engineering practices. Treatment process configurations shall be approved if the AWPRA applicant can demonstrate that the treatment process configuration meets or exceeds the minimum design criteria in this section.

1. ADEQ shall develop and make available guidance on designing treatment process configurations.

2. Treatment process configurations designed in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.

R18-9-F833. Technical, Managerial, and Financial Demonstration

A. An AWPRA applicant shall submit the following to the Department as a demonstration of technical, managerial, and financial capacity:

1. Technical Capacity. An AWPRA applicant's technical demonstration shall include, but is not limited to:

   a. A demonstration of the availability of an existing water source or contingency plans for an alternative source in the event of AWTF failure,

   b. Comprehensive technical and engineering specifications for the AWTF, including, but not limited to, the following:

      i. Design and treatment capacity,

      ii. Demonstration of sufficient AWP source water quantity and quality,

      iii. Demonstration of technical capability to implement an enhanced source control program,

      iv. Information on storage and distribution processes,

      v. A cross-connection control plan,

      vi. A corrosion control plan, and

      vii. Manufacturer specifications showing the life span of AWTF components, and

   c. A monitoring plan for initial source water characterization, including, but not limited to, the following:

      i. Online compliance monitoring for critical control points, and

ii. Performance monitoring and compliance monitoring for advanced treated water, and

d. A demonstration of the ability to respond to emergency situations including water quality excursions,

e. Documentation that the AWTF will be operated by a certified AWP operator pursuant to R18-9-B804, and

f. An operations plan, pursuant to R18-9-F836, including, but not limited to:

i. Maintenance requirements per the manufacturer's specification, and

ii. Repair and replacement protocols.

2. Managerial Capacity. An AWPRA applicant's managerial demonstration shall include, but is not limited to:

a. Documentation of ownership, management, and organization information, including, but not limited to:

i. An organizational chart, and

ii. Job descriptions and responsibilities, and

b. Information or copies of contractual agreements between AWPRA partners or any other entity associated with an AWP Project, including but not limited to:

i. Sewer collection systems,

ii. Water Reclamation Facilities,

iii. Source water conveyance systems,

iv. Advanced Water Treatment Facilities,

v. Water distribution systems,

vi. Blending Facilities,

vii. Sale prices of source water,

viii. Quality of source water,

ix. Duration of agreement, and

x. Compliance and reporting responsibilities, and

c. Documentation of groundwater or surface water discharge permits or recycled water permits addressing potential discharges from an AWTF in contingency situations, including, but not limited to, off-spec water disposal,

d. Operational information, including, but not limited to:

i. Certified operator credentials,

ii. The number of available operators,

iii. A training plan for staff,

iv. Technical competency,

v. Technical knowledge and implementation, and

vi. An Operations Plan, pursuant to R18-9-F836, and

e. An outline of tools and procedures employed in the management of the facility, including, but not limited to:

i. An asset management and maintenance plan, and

ii. A computerized maintenance management system.

3. Financial Capacity. An AWPRA applicant's financial demonstration shall include, but is not limited to:

a. Projecting the capital cost of the project,

b. Identifying ongoing cost, including, but not limited to:

i. Operation and maintenance costs,

ii. Capital replacement costs,

iii. Energy costs,

iv. Personnel costs, and

v. 20-year lifecycle cost of equipment, and

c. A five-year financial projection, including, but not limited to, planning and management of continuous funding sources to cover the costs of the AWP project,

d. Performing financial audits and bond rating, and

e. Performing rate studies or assessment of impact fees.

B. In addition to the requirements of this section, technical, managerial, and financial capacity shall be demonstrated using best practices. Similar technical, managerial, and financial demonstration approaches shall be approved if the Department determines that the alternate technical, managerial, and financial demonstration meets or exceeds the technical, managerial, and financial criteria listed above.

1. ADEQ shall develop and make available guidance on developing a technical, managerial, and financial demonstration.
2. A technical, managerial, and financial demonstration developed in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using best practices.

R18-9-F834. Total Organic Carbon Management

A. An AWPRA shall select, achieve, and maintain an up-to-date TOC limit in the advanced treated water using one of the two approaches described in subsections (B) and (C) below.

1. Upon AWTF operation, an AWPRA may switch between the two approaches each calendar year.
2. The TOC management annual approach shall be reported as part of the annual report pursuant to R18-9-E831.

B. Standard Approach or Limit.

1. An AWTF shall not exceed 2 mg/L of TOC in the advanced treated water.

2. The AWPRA shall monitor TOC using continuous online analyzers in the advanced treated water.

C. Site-Specific Approach or Limit. An AWPRA shall perform the two procedures described in subsections (C)(1) and (2) below. The site-specific TOC limit shall be the lower of the two values obtained from these procedures.

1. Trace Organics Removal Procedure. The AWPRA shall submit a plan to characterize the TOC of all original drinking water sources that feed the collection system(s) that are used by the AWTF as a treated wastewater source. This plan shall be submitted for approval by the Department as part of the Pilot Study Plan pursuant to R18-9-C815(B)(3) and (D) and again in the permit application as part of the R18-9-C816(A)(2)(d) submittals.

   a. Original Drinking Water TOC Characterization requires, but is not limited to, the following:

      i. Use of Departmentally approved TOC sampling locations,

      ii. Sampling for a minimum of one year,

      iii. Sampling at weekly intervals,

      iv. Calculation of the TOC at the 50^{th} percentile (median), 75^{th} percentile, and 95^{th} percentile,

      v. Establishment of a TOC alert level at the 75^{th} percentile, and

      vi. Establishment of the TOC action level at 1.5×95^{th} percentile.

   b. Upon the characterization of TOC in the original drinking water and approval from the Department, an AWPRA shall monitor for TOC in the advanced treated water using continuous online analyzers.

   c. For the purposes of this subsection, the TOC value for the Trace Organics Removal Procedure is the action level established in subsection (C)(1)(a)(vi) above.

2. Disinfection Byproducts Precursor Reduction Procedure.

   a. Method 5710 C: "Simulated Distribution System Trihalomethanes (SDS - THM)"

      i. The AWPRA shall apply 5710 C Method "Simulated Distribution System Trihalomethanes (SDS - THM)" to the advanced treated water to establish a TOC value.

      ii. Testing and sampling shall be conducted monthly for one year.

   b. The AWPRA shall submit the following information on the conditions at the time Method 5710 C from subsection (C)(2)(a) above was conducted to the Department as part of the Pilot Study Report pursuant to R18-9-C815(D) and again in the permit application as part of the R18-9-C816(A)(2)(d) submittals:

      i. Temperature,

      ii. pH,

      iii. Disinfectant dose,

iv. Residual and reaction time within the distribution system, and

v. Other standard conditions as described in Section 5710 B "Trihalomethane Formation Potential (THMFP)".

c. CCL5 - Disinfectant Byproducts Sampling Method.

i. The AWPRA shall sample for only the disinfection byproducts that exist in both EPA's "Contaminant Candidate List 5 - Exhibit 1b - Unregulated DBPs in the DBP Group on CCL 5" and EPA's "2018 Edition of the Drinking Water Standards and Health Advisories Tables" in the advanced treated water.

ii. If the sampling results in a value for any one DBP that is at or below the corresponding health advisory in EPA's "2018 Edition of the Drinking Water Standards and Health Advisories Tables", that value is the TOC value to be used in the comparison in subsection (C)(2)(d) below.

iii. Sampling shall be conducted monthly for one year.

d. The lower of the two resultant TOC values derived from the methods described in subsections (C)(2)(a) and (C)(2)(c) above is the TOC value for the Disinfection Byproducts Precursor Reduction Procedure.

3. AWPRA's Site-Specific TOC Approach or Limit. The lower of the two TOC values derived from the two procedures in (C)(1) and (2) above is the AWPRA's site-specific TOC limit.

4. Once a site-specific TOC approach or limit is ascertained, an AWPRA shall establish a TOC action level and alert level based on that approach or limit, using the lower of the two values derived from subsections (C)(1) and (2). Upon the exceedance of a TOC action level, the AWPRA shall conduct one of the following two actions within 72 hours of becoming aware of the exceedance:

a. Stop conveying advanced treated water, investigate, identify, and correct the issue; or

b. Correct the issue with confirmation that advanced treated water TOC does not exceed the action level, and identify the issue.

5. Frequency of Site-Specific Procedures. AWPRA's re-selecting the site-specific TOC approach to begin a new calendar year shall repeat the two procedures in subsections (C)(1) and (2) in order to reestablish an up-to-date TOC action level and TOC alert level.

R18-9-F835. Full Scale Verification

A. An AWPRA applicant shall conduct Full-Scale Verification of the AWTF. The AWPRA applicant shall develop a Full-Scale Verification Plan for submission to the Department and shall perform full-scale verification testing of the AWTF in compliance with the Plan.

1. If an AWPRA applicant builds a pilot facility to full-scale, the AWPRA applicant may conduct full-scale verification in lieu of the piloting requirements in R18-9-C816.
2. If conducting full-scale verification in lieu of the piloting requirements in R18-9-C816:
    a. A Non-National Pretreatment Program AWPRA applicant shall submit the Full-Scale Verification Plan, pursuant to subsection (B) of this section, to the Department for review and comment prior to conducting Full Scale Verification under this section.
    b. A National Pretreatment Program AWPRA applicant may submit the Full-Scale Verification Plan, pursuant to subsection (B) of this section, to the Department for review and comment prior to conducting Full-Scale Verification under this section, an approach recommended by the Department, or otherwise shall submit the Full-Scale Verification Plan and Report to the Department as a component of the AWP permit application pursuant to this section and R18-9-C816.
3. An AWPRA applicant shall provide evidence of an APP authorizing any discharge from an AWTF that occurred, occurs or will occur during piloting, full-scale verification, operation or otherwise.

B. Full-Scale Verification Plan. A Full-Scale Verification Testing Plan shall be developed and shall include, but is not limited to, the following requirements:

1. Detailed Testing Plan. The AWPRA applicant shall outline the verification testing procedure for each process within the AWTF, including, but not limited to:
    a. Treatment technologies and processes,
    b. Continuous online analyzers,
    c. Critical control points,
    d. Alarm systems, and
    e. Data recording instruments.
2. Monitoring Plan. The AWPRA applicant shall develop a Monitoring Plan pursuant to R18-9-E829.
3. Alarm System and Shutdown Testing Plan. The AWPRA applicant shall develop a plan to test and verify the functionality of all alarms, shutdown mechanisms, and processes proposed to be utilized in the Operations Plan developed pursuant to R18-9-F836.
4. Advanced Treated Water Diversion Plan. The AWPRA applicant shall develop a plan to obtain all necessary permits and approvals from the Department or other authorities for the purpose of diverting advanced treated water during the full-scale verification testing period.

C. Testing. Full-scale verification testing shall be conducted in accordance with the Plan established in subsection (B) as well as the requirements in this subsection:

1. The minimum testing period for AWPRAs conducting full-scale verification shall be one year,
2. An AWPRA shall, throughout the testing period, divert all advanced treated water in a manner approved by the Department pursuant to the AWP permit,
3. Before testing occurs, an AWPRA applicant shall confirm with the Department that any water reclamation facility providing treated wastewater to the AWTF has been issued an amendment to their APP(s) for provision of treated wastewater to an AWTF, and shall confirm that copies of the amended permit(s) are recorded in the AWPRA's Joint Plan pursuant to R18-9-B805.

D. Report. At the conclusion of the full-scale verification testing period, the AWPRA shall prepare and submit, in accordance with the compliance schedule established in the AWP permit, a final Full-Scale Verification Report to the Department for approval. The Report shall, at a minimum, include all information related to full-scale verification testing performed pursuant to this section, such as, but not limited to, the following components:

1. The date, time, frequency and exact place of sampling,
2. The name of each individual who performed the sampling,
3. The procedures used to collect the samples,
4. The dates the sample analyses were completed,
5. The name of each individual or laboratory performing sample analysis,
6. The analytical techniques or methods used to perform the sampling and analysis,
7. The chain of custody records,
8. Any field notes relating to the information described under this subsection,
9. The sampling results, and
10. Corresponding laboratory data for all samples.

E. An AWPRA shall not distribute advanced treated water to consumers until Departmental authorization is obtained.

R18-9-F836. Operations Plan

A. An AWPRA shall develop an Operations Plan in accordance with the compliance schedule established in the AWP permit which shall be followed throughout operation of the AWTF.

B. The Operations Plan shall include, but is not limited to, the following criteria:

1. A description of the operation of each treatment process and standard operating procedure,

2. Process schematics showing pathogen and chemical removal critical control points, alarms, and online analyzers, including all requirements pursuant to R18-9-E828(D),
3. A list of established alert levels and action levels at each critical control point,
4. A description of all inspection and maintenance protocols, schedules and other requirements for treatment process equipment,
5. A description of the ongoing monitoring requirements pursuant to R18-9-E829 and the reporting requirements pursuant to R18-9-E830,
6. The development of an emergency operations and response plan to identify and address upsets, failures, or emergency situations arising in the treatment train in an AWPRA facility that is responsible for producing advanced treated water. The emergency operations and response plan shall include, but is not limited to, the following requirements:
    a. Identification of upset conditions or emergency situations triggering a response under this subsection, including, but not limited to:
        i. Failure of critical control points,
        ii. Diversion of off-spec water,
        iii. Loss of source water to the AWTF,
        iv. Any exceedances of the alert levels and action levels, and
        v. Failures which constitute an acute exposure threat, including failure to meet pathogen log reduction values pursuant to R18-9-E828, and failure to meet Nitrite and Nitrate as Nitrogen MCLs pursuant to R18-9-E829,
    b. A decision-making procedure and the development of an off-spec water response to divert AWP process water or advanced treated water as a result of any treatment process failure or water quality deviation,
    c. Any failure to achieve the minimum target log reduction must be documented and a summary of the causes and corrective action must be reported to the Department, and
        i. The AWPRA shall take immediate action to discontinue the delivery of advanced treated water to the distribution system.
        ii. The AWPRA shall notify the Department and any public water system that is receiving the AWP project water within 60 minutes.
    d. Development of a timely response procedure in the event that advanced treated water violates a requirement of this Article, including, but not limited to:
        i. Identification and investigation of the points of failure within the treatment train and at the AWTF,
        ii. A procedure to resolve identified failures,

iii. Clear specifications regarding the time required for response to failures or exceedances, and

iv. A procedure for the utilization of automated systems equipped with triggers and alarms, as necessary,

v. Consideration of alternative water sources, as necessary, to ensure delivery of a continuous water supply, and

vi. Compliance with all applicable public notice requirements of the Safe Drinking Water Act, and

e. Development of a shutdown plan establishing shutdown and post-shutdown protocols, including, but not limited to:

i. A procedure for draining piping and tanks, as necessary, to prevent freezing or the accumulation of stagnant non-compliant water, and

ii. A procedure for managing post-shutdown conditions, and

7. A description of staffing requirements at the AWTF including, but not limited to, the following criteria:

a. The roles and responsibilities of all staff,

b. The status of, and requirements for, certified operators,

c. A description of the annual training and continuous education requirements for all staff, and

d. A description of any provisions for training new personnel, and

8. A description of the SCADA system utilized at the AWTF along with, but not limited to, the following additional SCADA requirements:

a. A description of how the system will assist the AWTF in achieving compliance, when necessary,

b. A description of how the SCADA system will communicate and interoperate with the SCADA systems of all AWPRA facilities that provide treatment pursuant to this Article,

c. Information on how the system acquires and utilizes monitoring data to inform operators, identify failures at critical control points, and respond to failures,

d. A procedure for testing the system,

e. A protocol/procedure to secure and protect the SCADA system from unauthorized access and cyberattack, and

f. Establishment of a SCADA system testing schedule, and

9. A description of the communication procedures between the AWPRA and all relevant treatment plant operators for situations including, but not limited to:

a. Normal operations, and

b. Upset conditions and emergency response protocols.

C. In addition to the requirements of this section, an Operations Plan shall be developed using good engineering practices and best management practices. Similar Operations Plan criteria shall be approved if the AWPRA applicant can demonstrate that the Operations Plan components meet or exceed the criteria listed above.

1. ADEQ shall develop and make available guidance on developing an AWP Operations Plan.
2. An AWP Operations Plan developed in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.

D. An AWPRA shall submit the Operations Plan to the Department for approval as a compliance schedule item under the AWP permit.

E. An AWPRA shall update the Operations Plan as necessary following any modifications to the treatment process that affect the operational procedures of the AWTF. The updated Operations Plan shall be submitted to the Department for approval as a component of a permit amendment application.

R18-9-F837. Vulnerability Assessment

A. An AWPRA shall conduct a vulnerability assessment for the AWP project for the purpose of identifying areas and processes with a potential to be vulnerable to attack, sabotage, or disruption.

B. The AWPRA shall consider and assess all potential hazards associated with contaminants in the municipal wastewater source.

C. The AWPRA shall develop an emergency response plan for identified hazards the AWP project may face.

D. The SCADA systems of all AWPRA facilities included in the AWP project that provide treatment pursuant to this Article shall be designed and operated such that they are secured and protected, both physically and electronically, from unauthorized access and cyberattack.

E. The AWPRA shall periodically review the vulnerability assessment along with the permit renewal pursuant to R18-9-D822, at a minimum, or at the Director's discretion. A vulnerability assessment update shall include the identification of any new hazards and the corresponding risk management controls the AWPRA will establish.

F. In addition to the requirements of this section, a vulnerability assessment shall be conducted using Best Management Practices. Methods for conducting the vulnerability assessment shall be approved if the AWPRA applicant can demonstrate that the method is sufficiently detailed and robust for the purpose of conducting a protective vulnerability assessment.

1. ADEQ shall develop and make available guidance on conducting an AWP vulnerability assessment.
2. An AWP vulnerability assessment conducted in a manner consistent with the criteria contained in an applicable ADEQ guidance document shall be considered to have been conducted using good engineering practices.