ISSUE BRIEF #4

GROUNDWATER IN THE ASSURED WATER SUPPLY PROGRAM

ISSUE STATEMENT

Large parts of the Active Management Areas (AMAs) remain groundwater-dependent due to a lack of renewable water supplies and infrastructure, which creates uncertainties as groundwater supplies become more limited.

- What are the role and consequences of the use of groundwater to support new growth after 2025?
- What are the risks to homeowners whose physical groundwater supplies may be depleted after the regulatory Assured Water Supply 100-year timeframe?
- What roadblocks prevent access to renewable supplies and infrastructure in these groundwater-dependent areas?

BACKGROUND

The Assured and Adequate Water Supply Program was designed as a consumer protection law and has evolved into a significant tool for sustaining the state's economic health by preserving groundwater resources and promoting long-term water supply planning.[1] The Assured Water Supply (AWS) Rules for the State's AMAs were developed with stakeholder input over many years, ultimately adopted by the Arizona Department of Water Resources (ADWR) in 1995[2], and subsequently modified over time. The AWS Program provides consumer and economic protection by requiring a demonstration of a 100-year water supply to serve a new development before lots can be sold in the AMAs.

An AWS can be demonstrated through either a Designation of AWS (Designation) or Certificate of AWS (Certificate). To secure either a Certificate or Designation, a 100-year supply of water must be demonstrated to satisfy the needs of the proposed use, either for an applicant subdivision in the case of a Certificate, or for all of the demands within the service area of a water provider who seeks a Designation. The Director of ADWR must review a Designation at least every 15 years to determine whether the Designation should be modified or revoked.[3] The Director does not typically reevaluate a Certificate. Landowners also have the ability to apply for an Analysis of AWS to partially satisfy the regulatory criteria, prior to obtaining a Certificate. Analyses are typically used to prove that water will be physically available for master planned communities.[4] If an Analysis is issued for groundwater, it reserves a specific volume of water for 10 years (for purposes of other AWS reviews) only for the specific development plan or plat that is the subject of the Analysis.[5]

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[1] https://new.azwater.gov/aaws.
[2] The 1995 rules did not include provisions specific to consistency with the management goal of the Santa Cruz Active Management Area (SCAMA), which was created by the Legislature in 1994 (A.R.S. § 45-411.04). AWS rules have not yet been modified to address consistency with the management goal of the SCAMA, and it is not addressed in this Issue Brief.
[3] A.A.C. R12-15-711.
[4] See *Application for an Analysis of Assured Water Supply*, https://new.azwater.gov/sites/default/files/media/AnalysisofAssured_REV%202-20-2020.pdf.
[5] A.A.C. R12-15-703. Analyses may be renewed in 5-year increments if certain criteria are met. *Id.*

An AWS for either a Certificate or Designation can be demonstrated based entirely or partially on groundwater. Two of the requirements for demonstrating an AWS are that the water for the proposed Certificate or Designation is physically available for 100 years and that the use of the water is consistent with the management goal of the AMA. Physical availability of groundwater is the regulatory measure of an applicant's ability to demonstrate sufficient groundwater for 100 years. To satisfy the physical availability requirement for groundwater, an applicant must show that its groundwater withdrawals would not cause the depth to groundwater to exceed a regulatory limit (1,000 feet below the land surface in the Phoenix, Tucson, Prescott, and Santa Cruz AMAs; 1,100 feet in the Pinal AMA) and would not negatively affect previously issued AWS Determinations[6] and existing municipal uses.[7]

The requirement that projected groundwater use be consistent with the management goal may be met if withdrawals are made pursuant to the groundwater allowance or through the use of pledged extinguishment credits (which are added to the groundwater allowance balance).[8] More detail on these types of groundwater withdrawals is provided in the *Unreplenished Groundwater Withdrawals Issue Brief*.

In the Phoenix, Pinal and Tucson AMAs, the requirement that projected groundwater use be consistent with the management goal may also be satisfied if the subdivision or water provider becomes a member of the Central Arizona Groundwater Replenishment District (CAGRD). The Arizona Legislature authorized the CAGRD as a responsibility of the Central Arizona Water Conservation District (CAWCD), which operates the Central Arizona Project (CAP). Since CAWCD encompasses only Maricopa, Pinal and Pima Counties, the CAGRD does not serve the Prescott or Santa Cruz AMAs. The CAGRD replenishes *excess* groundwater[9] pumped by or delivered to its members, after that volume is annually calculated and reported to the CAGRD. The CAGRD must submit a Plan of Operation every ten years to ADWR for review and approval. The Director of ADWR must determine whether the Plan is consistent with achieving the management goals of the AMAs in CAGRD's service area.[10]

ISSUE DESCRIPTION

Even with the benefits that followed the 1980 Groundwater Management Act, there are numerous pressures placed on groundwater in the AMAs, many of which have been identified in the *Unreplenished Groundwater Withdrawals, Hydrologic Disconnect,* and *Exempt Wells* Issue Briefs. The AWS Program has been a significant factor in encouraging municipal water providers to reduce groundwater use in the AMAs over the last 25 years. In the context of all the challenges identified by the Post-2025 AMAs Committee, the State should evaluate the AWS Program and consider how it can be improved well beyond 2025. Three main questions related to groundwater use under the AWS Program provide a starting point for evaluating whether the AWS Program could better provide consumer and economic protection and better aid in achieving the AMA management goals.

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[6] A.A.C. R12-15-701(31): "Determination of assured water supply" means a certificate, a designation of assured water supply, or an analysis of assured water supply.

[7] A.A.C. R12-15-716 and ADWR Substantive Policy Statement: *Hydrologic Studies Demonstrating Physical Availability of Groundwater for Assured and Adequate Water Supply Applications* (AWS 7).

[8] A.A.C. R12-15-722. The Groundwater Allowance is a volume of groundwater which may be calculated for each AWS Certificate or Designation according to rules specific to each AMA. *See Unreplenished Groundwater Withdrawals Issue Brief.*

[9] "Excess groundwater" is any amount of pumped groundwater beyond what is permitted by the AWS rules. With a few exceptions, this generally means the volume of groundwater pumped that exceeds the groundwater allowance and/or extinguishment credits of a CAWS or DAWS. More detail on CAGRD operations is provided in the *CAGRD Replenishment and Water Supplies Issue Brief*.

[10] A.R.S. § 45-576.03.

What are the role and consequences of the use of groundwater to support new growth after 2025?

Under the current regulatory structure, groundwater will continue to be utilized to serve subdivisions that fall under the jurisdiction of the AWS Program. New Certificates or Designations of AWS may utilize groundwater that is consistent with the management goal through the use of Extinguishment Credits, the Groundwater Allowance, or membership in the CAGRD. As groundwater uses expand to serve new development, there is a corresponding reduction to the volume of groundwater that exists in the aquifer, some of which is replenished. In the Phoenix, Pinal, and Tucson AMAs, localized groundwater depletion can be mitigated when replenishment occurs in close proximity to withdrawals.[11]

Groundwater withdrawals by all sectors will impact the ability of new AWS applicants to demonstrate physical availability of groundwater. In the Pinal AMA, ADWR modeling shows insufficient groundwater is physically available to meet the demands of previously issued Analyses, Certificates and Designations over the 100-year modeling period. If left unresolved, additional AWS applications using groundwater or stored water recovered outside the area of impact will not be approved.[12] The Prescott AMA faces similar challenges, with an increasingly reduced volume of groundwater physically available for new AWS Determinations.[13] Other AMAs are also likely to face reduced physical availability of groundwater after 2025.

In addition to curtailing the ability to subdivide lands for new development, continued groundwater reliance may lead to other adverse impacts. Unless steps are taken to reduce or ameliorate impacts of groundwater drawdown, depths to water in the AMAs would decline, resulting in increased land subsidence, decreased aquifer storage, and the potential deterioration of water quality.[14] The degree to which these adverse impacts may occur when groundwater levels fall to depths of 1,000' below land surface is also unknown.[15] ADWR is in the process of updating its groundwater models for the Phoenix and Tucson AMAs, which should provide better projections of the groundwater supplies in these two AMAs.

What are the risks to homeowners whose physical groundwater supplies may be depleted after the regulatory Assured Water Supply 100-year time frame?

While the water demands of all previously issued Certificates or Designations must be incorporated in future AWS applications, groundwater pumping reduces the amount of groundwater available for all existing municipal water providers serving certificated lands or designated service areas through time. These impacts may be more likely to occur where pumping and replenishment or storage and recovery are hydrologically disconnected. Even with an AWS Determination, other factors, including withdrawals

[11] The CAGRD has the flexibility to replenish in various locations to fulfill its replenishment responsibilities but is not required to replenish within the area of impact of its members' groundwater pumping. The CAGRD is not responsible for ensuring groundwater physical availability for its members, but rather to maintain its members' consistency with the AMA management goal.

[12] 2019 Pinal Model and 100-year Assured Water Supply Projection Technical Memorandum, October 11, 2019, http://infoshare.azwater.gov/docushare/dsweb/Get/Document-11793/2019_Pinal_Model_and_100-Year_AWS_Projection-Technical_Memorandum.pdf; Pinal Model 2019 Update Presentation, November 1, 2019, Slide 53, https://new.azwater.gov/sites/default/files/20191101_Pinal_Model_2019_Presentation.pdf.

[13] Prescott AMA 4MP, Section 1.5, page 1-4.

[14] "Ground-Water Depletion Across the Nation." USGS, 2003. https://pubs.usgs.gov/fs/fs-103-03/JBartolinoFS(2.13.04).pdf.

[15] Phoenix 3MP – Section 8.9; Previous scholarship has demonstrated that the 1,000 foot depth limit was not based upon hydrological or technical considerations (see, Rita Pearson Maguire, *Patching the Holes in the Bucket: Safe Yield and the Future of Water Management in Arizona,* 49 Ariz. L. Rev. 361 (2007)).

from groundwater users not subject to the AWS requirements, may also affect the availability of groundwater supplies during the 100-year regulatory timeframe of an AWS Certificate or Designation. Ultimately, homeowners rely on the water provider for service, with an expectation of consumer protection by local or state government, no matter the status of the AWS.

What roadblocks prevent access to renewable supplies and infrastructure in these groundwater-dependent areas?

Groundwater-dependent municipal water providers face obstacles in their ability to acquire renewable water supplies, to become Designated, to extend their existing Designations, or to reduce or eliminate their reliance on the groundwater. There are 276 undesignated municipal water providers in the five AMAs. Since 2000, no undesignated municipal water providers have successfully been newly Designated in the Phoenix AMA, which illustrates the difficulty of building a renewable water supply portfolio and reducing dependence on groundwater.

One of the primary challenges to reducing groundwater reliance is the lack of available renewable supplies. With fewer renewable supplies available for acquisition, competition for those supplies will increase in the future. The 2019 *Long-Term Water Augmentation Options for Arizona* report concluded that, for the most part, Arizona's water augmentation options have already been identified and additional water supplies coming from outside of Arizona are not expected except for the potential opportunity of a desalination project with Mexico.[16] The report also emphasized the importance of working with the water resources we have to meet our future needs.[17]

Additional obstacles faced by groundwater-dependent municipal water providers include the lack of institutional structures to facilitate the acquisition of renewable supplies, constraints on the marketability of surface water rights, costs of such supplies, certain restrictions imposed on private utilities by the Arizona Corporation Commission, resistance to and/or limitations on water transfers, obstacles to accessing infrastructure to move renewable supplies, and the need to acquire permanent renewable water supplies well in advance of actual water use as emphasized by the AWS Rules. These obstacles compound an overarching challenge for water providers to finance renewable water supplies, particularly those with smaller customer bases or greater geographical distance from augmentation opportunities. These challenges are even more acute in the Pinal, Prescott and Santa Cruz AMAs.

The recent effort by the Town of Queen Creek to acquire renewable supplies to obtain a Designation and eliminate the replenishment obligation of the CAGRD member lands it serves, demonstrates the difficult financial and logistical hurdles municipal water providers face. Understanding the Town's challenges and motivations, as well as those of the City of Buckeye, which has also pursued for years a Designation, could deepen the understanding of these issues and present opportunities for improvement moving forward.

[16] *Long-Term Water Augmentation Options for Arizona*, Prepared for the Long-Term Water Augmentation Committee of the GWAICC by Carollo Engineers, Montgomery & Associates and WestLand Resources, Inc., p. 2, https://new.azwater.gov/sites/default/files/Long-Term%20Water%20Augmentation%20Options%20final.pdf.
[17] *Ibid.*