
# Groundwater in Rural Arizona

Water for Arizona Coalition Webinar Series

**Webinar Q & A** | *Answers provided by Haley Paul of National Audubon Society, Jocelyn Gibbon of Freshwater Policy Consulting LLC, and Kim Mitchell of Western Resource Advocates.*

## Groundwater's Importance to Communities: A Panel of Local Voices

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- **Does the 100-year assured water supply rules in Flagstaff mean that it's OK to pump groundwater even if the recharge occurs miles from where the groundwater was pumped for homes?**
    - The Adequate Water Supply Designation that Flagstaff received in 2013 from the Arizona Department of Water Resources (ADWR) means that the City completes annual reporting as a "checks and balances approach to ensure that it is prepared to meet current, committed, and projected water demands" (City of Flagstaff website).There is no requirement that new subdivisions demonstrate an assured or adequate water supply in the Flagstaff area, nor is there a legal requirement that groundwater be recharged. Water providers outside of Active Management Areas (AMAs) can choose to seek an adequate water supply determination to show that their supplies will be "continuously, legally, and physically available" for 100 years (as defined by the legislature and ADWR) and that they are of drinking water quality. Providers must also prove their financ ial ability to construct, operate, and maintain a water system. The benefit of this designation is that it provides long-term assurance to investors, businesses, and homebuyers that our water supplies will last into the future" (City of Flagstaff website).

- **If the RMA were to pass, would those management plans resemble that of the AZ AMAs or would they be similar to the plans under the California Sustainable Groundwater Management Act (SGMA)?**
    - It depends. The idea behind the Rural Management Areas (RMAs) is to allow for customization of the rules protecting groundwater to meet local needs, within a set of sideboards. For instance, there could be a list in the law of the possible regulatory and incentive options that a county could choose from when determining how an RMA would protect groundwater, such as funding for groundwater recharge projects or well-spacing rules to limit the impact that wells can cause their neighbors. Then, rural areas, through local advisory boards, could pick what options best meet their needs, based on the goal of their RMA.

- **Are you working with the state department of agriculture or Cooperative Extension to help farmers shift from growing grass in the desert (that's what hay is) to growing something of higher value that requires less water?**
    - Our Coalition is not directly engaged in this work, though we recognize it is a part of the puzzle for sure. Environmental Defense Fund (EDF) is currently engaged in some work with farmers in Pinal County to assess the viability of growing guayule, a desert-adapted and rubber-producing plant, in place of crops like cotton and alfalfa.

- **The industries that are the biggest users also have the most to lose if water is mismanaged and lost. Are any of those business interests participating in this push for rural management areas?**
    - There is a growing chorus of business voices who recognize that Arizona's reputation and economic future are both on the line if we see headlines in the New York Times that places in rural Arizona are running out of water--or if that indeed comes to pass. But we definitely need more rural voices and voices of those whose water would ultimately be protected should the state enact groundwater management outside of AMAs to speak up even more.

- **As with the Saudi agriculture east of Phoenix that exports back to their country, are there any foreign-owned agribusiness water users within your areas?**
- **To what extent are commercial agriculture companies from foreign nations a problem in rural AZ? Is their presence increasing or decreasing, and how might we best ensure they don't take advantage of our lax water laws?**
    - Out-of-state and out-of-country enterprises have certainly keyed in on Arizona's lack of groundwater regulation outside the central, populous parts of the state and have been expanding operations in places like Mohave County, La Paz County, and Cochise County, to name a few hot spots.

# Where Did the Water Go? Impacts of Groundwater Overuse

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- **Can amount of irrigation water on irrigated acres be increased in an INA?**
  - Yes. Both exempt and non-exempt wells may still be drilled in an Irrigation Non-expansion Area (INA). However, water pumped from those wells cannot be used to irrigate *new* lands two or more acres in size. In an INA, non-exempt wells (wells pumping more than 35 gallons per minute) supplying irrigation uses and non-exempt wells pumping more than 10 acre-feet per year for a non-irrigation use require meters to measure the amount of groundwater pumped. Within an INA there are limits on the *expansion* of irrigated lands but not on the quantity of water used on those lands (ADWR website).

- **Are fissures more common in the Basin and Range aquifers, given the underlying geology is more gravel compared to the Colorado [Plateau] aquifer?**
  - Yes. The Colorado Plateau aquifers tend to be composed of permeable rock, while the Basin and Range basin-fill aquifers tend to be composed of gravel, sand, and silt - collectively called alluvium. Fissures are a result of land subsidence that occurs in alluvial basins that overly bedrock. With land subsidence, there is compaction of the alluvial material as groundwater is withdrawn and the land surface elevation drops. When the land subsidence occurs over an area that has high bedrock next to shallow bedrock, it creates a zone where subsidence occurs at different rates. This creates tension in the overlying alluvium and forms an earth fissure. "As the ground subsides unevenly, stress along the basin margins lead to earth fissure formation. Counties in Arizona host earth fissures, include, Cochise, La Paz, Maricopa, Pima and Pinal County" (Arizona Geological Survey website). There are a number of layered aquifers in the Colorado Plateau sandwiched in between hard rock areas that are non-waterbearing; but typically not large alluvial basins like basin and range geology. Locations of mapped earth fissures in Arizona can be found on this interactive web map.

- **Do you have a source for the quote from the Springs Stewardship Institute about Montezuma Well?**
  - Yes. See Springs Distribution, Flow, and Associated Species in the Verde River Basin, Arizona, p.5 ("For example, Montezuma Well near Camp Verde supports the largest number of endemic and rare species of any site in North America to our knowledge…"). Here is a fact sheet on the unique species found at the well.The Springs Stewardship Institute maintains a database on springs and associated information. You can learn more on their website.

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- **Wondering if there are sources of the critiques of AMAs?**
    - For more information on the shortcomings of the Active Management Areas, check out "The Myth of Safe Yield" from ASU's Kyl Center for Water Policy.
    - The University of Arizona's Water Resources Research Center did a great review of the conservation programs within the AMA management plans: *Evolution and Evaluation of the Active Management Area Management Plans*.
    - A few other older but still relevant reads:
        - L. William Staudenmaier, "Between a rock and a dry place: the rural water supply challenge for Arizona," 49 ARIZ. L. REV. 321 (2007).
        - Rita Perason Maguire, "Patching the Holes in the Bucket: Safe Yield and the Future of Water Management in Arizona," 49 ARIZ. L. REV. 361 (2007).

- **Maybe I misunderstood what is going on in NV but it seems to be as the ground water becomes more critical it would be wise to have more oversight of local users not less, which as I understood what you said is what happens - more local control the more critical the water levels become.**
    - Yes, as the water levels become more critical there is at least a new opportunity for local control: local water users can develop a management plan designed to remove the "critical" designation for a basin. But if they don't, then after ten years the State Engineer must start curtailing uses. It seems that the idea is to allow local users to develop and buy into a plan before the state institutes painful cuts.

- **Water as a commodity is problematic, to say the least. Is there any movement in the Western states toward the legal rights of water/nature?**
    - In the Colorado River Basin, while there are no legal rights of water/nature, there are many creative ways we can work to secure water for the environment. Whether that is through encouraging conservation and leaving more water in rivers, working across international boundaries to dedicate water for restoration projects like in the Mexicali Valley of northern Mexico, or working to protect groundwater that sustains rivers, streams, and springs (and their associated habitat), we think that working within the existing constitutional framework can still produce benefits for nature. We agree that water is much more than just a "commodity," if that is defined as an article of trade or commerce.

*These webinars were hosted by Audubon, and brought to you by the Water for Arizona Coalition, which supports policies and innovative practices to ensure a reliable water supply to meet the state's needs. Collectively, we have over 60,000 Arizona members, as well as hundreds of hunter, angler, business, and outdoor recreation partners around the state.*

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