



Sweetwater Wetlands. Photo: Sharon B. Megdal

## Reflections: A Cloudy Day at Sweetwater Wetlands

by Sharon B. Megdal  
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Graduate students in my “Water Policy in Arizona and Semi-arid Regions” class visited the **Sweetwater Wetlands** on Saturday, February 11, 2023. We were joined there by Professor David Quanrud and students from his “Wildland Water Quality” class. A visit to the wetlands is always a helpful addition to classroom discussions and readings. There we can see how treated wastewater is recharged and reclaimed for reuse and benefits the environment. Open to the public, it is a hidden gem and worth a visit. We visited the Wetlands on a cloudy, somewhat gloomy morning. Clouds often contribute to interesting photos, and the reflections of the clouds in the water led me to write this essay.

These can be considered gloomy times when it comes to water. Bluntly stated, the Colorado River system, which has supplied over 35% of Arizona’s annual water use, is in crisis. Regardless of what you call it — long-term drought, climate change, or aridification — annual Colorado River flows over the past 20+ years have been lower, and sometimes much lower, than the long-term average. On top of that, allocations to the Lower Basin states of Arizona, California, and Nevada exceed what could be expected of the Colorado River even in better times. Despite this, we have not reduced our use of Colorado River water to be in balance with what Mother Nature provides. Instead, we have been living off our water supply savings by drawing down Lake Mead, the largest surface water reservoir in the United States. Our savings are now depleted, and the prospects for replenishing the reservoir any time soon are low. The immediate collective goal is to avoid a crash of the system; that is, to avoid losing the ability of the system to generate hydropower and deliver water downstream of Hoover Dam. Achieving this goal will require significant cuts in water deliveries to prevent water storage in Lake Mead and Lake Powell, the other large Colorado River reservoir, from declining much more. That the seven basin states have been unable to come to agreement as to how to spread the burden of large water cuts is not surprising. Unprecedented and painful actions are required. However, we do not have the luxury of time, even with better-than-average precipitation this winter. Action must be taken. Legal wrangling, which is a concern but may be difficult to avoid, will not produce water. **The Colorado River is not waiting.**

Unfortunately, this is not the only water challenge Arizona faces. Groundwater, another major Arizona water supply, is also highly stressed. Groundwater, which is relied upon to meet over 40% of Arizona’s annual water needs, has been used in amounts that exceed what is being replenished. Groundwater overdraft led to adoption of the 1980 Groundwater Management Act, yet it continues both within the Active Management Areas (AMAs), which are subject to groundwater management, and outside them, where there is no effective groundwater management.

Overdraft led the Arizona Department of Water Resources (ADWR) to halt certifications of assured water supply for groundwater-dependent development in two rapidly growing areas — the Pinal AMA and the Lower Hassayampa Sub-basin (Buckeye area) of the Phoenix AMA. In December 2022, ADWR declared the Hualapai Valley Groundwater Basin in Northwestern Arizona a new Irrigation Non-expansion Area (INA), meaning irrigated acreage cannot expand over what was historically irrigated. And though voters in the Willcox area rejected formation of an AMA there, voters in southeastern Cochise County approved formation of a new AMA for the Douglas Basin.

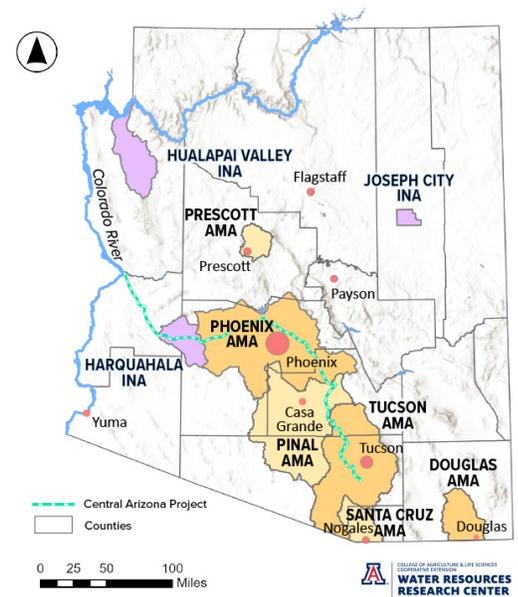
Note that estimates of dependence on Colorado River water and groundwater are statewide averages. Reliance on water sources varies across Arizona; therefore, the water situation varies across communities and regions. (Water source dependence is pictured on **an inset** to the WRRC's water map poster.) Nevertheless, it's fair to say that water challenges pervade Arizona.

The level of awareness of these challenges is increasing. People in Arizona, along with researchers, students, and media from across the world, want to know about the solutions. They are asking what they as individuals, along with what their communities, can do. They want to know what options are being considered by whom. This is a hopeful sign, as broad involvement in examining the implications of alternative pathways to solutions is critical.

Though clouds remain, there are options to pursue. Recently, I had the opportunity to be interviewed on **Science Friday**. I was asked by host Ira Flatow about possible solutions. In the limited time I had, I mentioned several, many of which I have **previously written about**: conservation, more efficient use of water, water reuse, other water augmentation such as desalination, moving water, marketing and other mutually agreeable exchanges, rainwater and stormwater capture, and changes to how we design our buildings and communities. Ira asked me about the cost of some of these options. Indeed, costs for implementation of the solutions can be very high, and the water users must pay. Water pricing, not mentioned in the radio interview list, is a key determinant of water use and a huge topic of its own. Options such as desalination or moving water to Arizona from a far-away basin may be expensive and/or seem far-fetched, but many agree that they should be evaluated. What is critical to making sound decisions and investments is to evaluate the many options in terms of water yield (the extent to which they reduce the imbalance in supply and demand), costs, time frame, regulatory hurdles, and public acceptance. Careful analysis must be conducted and broadly shared. Public acceptability is very important. As water users, we all have a voice in this, and we all are decision-maker-influencers, meaning we can influence the associated political debates.

At the end of the interview, Ira asked: Was I feeling optimistic that we are up to the challenge? Though I have sometimes been criticized for sounding too optimistic, I noted that I believe we must be optimistic collectively to bring all the people together to develop the pathways to solutions. If we have a pessimistic mindset, it will be difficult to do the hard work required of so many.

Back to the Saturday morning at Sweetwater. Though it was a somewhat gloomy morning, clouds bring us much-needed precipitation. Indeed, that Saturday morning filled with clouds was a good morning. Being surrounded by bright students who will help shape our future contributes to my feeling optimistic that we will get the hard work done.



**Active Management Areas (AMAs) and Irrigation Non-expansion Areas (INAs).**



**Sweetwater Wetlands Field Trip. February 11, 2023.**

