

ARIZONA JOURNAL OF ENVIRONMENTAL LAW & POLICY

VOLUME 9

SPRING 2019

ISSUE 2

WATER, CLIMATE CHANGE, AND THE LAW: THE CASE FOR MORE PROTECTION

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I. Introduction

If environmental laws are a means to an end, what is the “end” of environmental laws in Arizona? What do we hope to protect? At what point do existing laws and institutions become obsolete in light of increasing development pressure, changing societal values and climate change? What is the path forward given so much change and uncertainty? Is there a meaningful possibility of protecting both our economy and the fragile environment that we live in in the context of climate change?

As the pace of change accelerates in human and natural systems, it will become increasingly important to ensure that our institutions, laws and policies are enabling a resilient and sustainable future for our children, as opposed to becoming barriers to progress. This requires ongoing evaluations of the costs and the benefits of current approaches, as well as an assessment of whether there are feasible alternatives that might be more effective in meeting the goals of Arizona citizens.

The groundwater management system in Arizona, first adopted in 1980 through the Groundwater Management Act, was very sophisticated, remarkably so in light of Arizona’s current reputation as a hard-line conservative state. In fact, though there have been scores of amendments over time, the basic provisions have not changed very much. That said, climate change and an array of other

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issues pose challenges that have not yet been addressed, and pressure on water supplies, rural communities and natural habitats is increasing over time.

The Southwestern US is at the “bleeding edge,” as climate scientist Jonathan Overpeck puts it, of climate change impacts—given ever-increasing temperatures in combination with likely reductions in average total precipitation. Surface water flows are already declining and are expected to continue to decline over the decades ahead.¹ Though the Southwest actually experiences fewer extreme weather and climate events (hurricanes, tornados, storm surges, etc.) than other parts of the US, the incremental changes in temperature, precipitation and runoff are already having dramatic effects on our water supplies. This is particularly evident in the Colorado River reservoirs, with water levels steadily declining. The “bathtub ring” around lakes Mead and Powell provide ample evidence that our assumptions about water supply availability are not in line with hydrologic reality. However, the more irreversible but less recognized impacts are those happening across our landscapes—especially in the context of changes in water-dependent ecosystems and forests. And they are directly impacting rural communities and their economies.

Why do changes in riparian and aquatic systems matter? They matter not only because they support the majority of the biodiversity of the state, but because extinction is permanent, and because biodiversity has intrinsic value to many. They also matter because the quality of our environment is a significant part of our quality of life. And quality of life is one of the pillars of our economy—Arizona without the Grand Canyon, the White Mountains, the Verde, Salt and San Pedro Rivers, the National Forests and Parks, and rural ranching and agricultural communities is not the Arizona that we know and love.

Although there are many challenges ahead—not the least of which is Arizona’s long-term failure as a state to invest in the future²—there are paths forward in building a more resilient future for rural communities and for environmental values.

II. Background

Arizona has been dealing with water shortages for a long time. Groundwater overdraft, or unsustainable pumping of groundwater, began in the 1940’s and accelerated through the subsequent decades. The 1980 Groundwater Management Act (GMA) was hailed by many at the time it was adopted as the most innovative groundwater management system in the country. In fact, the Ford Foundation selected it as one of the 10 most innovative programs in state and local government in 1986.

¹ Bradley Udall & Jonathan Overpeck, *The twenty-first century Colorado River hot drought and implications for the future*, 53 WATER RESOURCES RESEARCH 1763, 2404–18 (Feb. 17, 2017), <https://doi.org/10.1002/2016WR019638>.

² Evident in reduced funding for everything from education to infrastructure to parks to the state agencies that serve us.

The GMA established the Arizona Department of Water Resources, and four Active Management Areas (AMAs) in the central part of the state stretching from Prescott to the Mexican border (later the Santa Cruz AMA was carved out of the Tucson AMA to create a fifth AMA). The GMA also established long-range water management goals in the AMAs and an entirely new groundwater rights and permits system, ensured completion of the Central Arizona Project (CAP), and possibly most important, created the 100 Year Assured Water Supply (AWS) Rules. The Code also established two Irrigation Non-Expansion Areas (INAs) and a third was added later— to limit agricultural expansion in areas facing groundwater depletion that did not have significant municipal development at the time.

The AWS Program has required the municipal water users of the state to move from dependence on overdrafted groundwater to use of renewable supplies, including CAP water and municipal effluent, because all new municipal development is required by AWS rules to use renewable supplies either directly or through aquifer recharge and recovery. The result is that despite rapid growth in population, the Tucson and Phoenix AMAs have essentially eliminated groundwater mining within their boundaries. Although mandatory conservation, limits on new agricultural irrigation, and well metering have all made contributions to the groundwater management goals, the AWS Program is the regulatory program that has made the largest contribution to the resilience of Arizona's cities.

The GMA, the Central Arizona Project, and the AWS Rules have been amazingly successful at limiting groundwater overdraft and assuring long term water supplies *in the AMAs—especially Tucson, Pinal and Phoenix.*



Active Management Area Map

The only thing that has saved the Santa Cruz and Prescott AMAs—which do not have access to the federally-subsidized imported supplies that are now available in the central corridor of the state through the CAP—is that so far development pressure has not outstripped the local water supplies, and there have been some significant reductions in agricultural use.

However, virtually none of the protections of the GMA apply outside of the five AMAs and the three INAs—and the consequences of that are now being felt in multiple parts of the state, including in Cochise County, where vineyards and orchards are expanding rapidly and groundwater levels are dropping even

more quickly. They are being felt in Flagstaff, where Lake Mary is half full and massive groundwater importation projects are underway. And they are being felt in western Arizona where expanded irrigation efforts are producing alfalfa for export while local groundwater users have no way to stop the expansion or protect their own wells.

But even in the AMAs there is no explicit protection for riparian habitats or for flowing streams³—with the possible exceptions of the Santa Cruz AMA, which has a groundwater management goal related to preserving the flows of the Santa Cruz River, and some limited groundwater pumping limitations within the Arizona Water Settlements Act⁴.

The bifurcation between surface water law and groundwater law is one fundamental problem with Arizona's water management system, because the intersection of shallow groundwater and flowing streams is what supports the majority of the state's valuable riparian areas. The same molecules of water that are defined and managed under surface water law in one part of a watershed may quality as groundwater just down or upstream, which makes adjudication and management of water rights very difficult.

The other major problem is that there is no affirmative state-level tool available to protect habitats and species, or the groundwater and surface flows that support our increasingly fragile riparian systems. This leaves Arizona with the federal Endangered Species Act, the Clean Water Act⁵, and federal reserved rights (related to the purposes of Indian Reservations and other federal reserves) as the three major tools for protecting the environment. We know that those are very blunt instruments, but they are all we have, and therefore they have huge value as a fallback position. Though they have their place, they are fraught with conflict and depend on the federal government and the courts to provide protection—not an efficient or proactive way to achieve Arizona's own goals.

In addition, Arizona has historically had less interest in a strong government role in protecting the environment than many other states. Though the State has a history of impressive bipartisan regulatory protections like the 1980 Groundwater Management Act and protections provided through the 1986 Environmental Quality Act, the effects of those landmark pieces of legislation are now eroding—not just because of changes in the laws themselves, but because of defunding of the agencies that monitor progress, collect data, convene citizens to find solutions, and protect the public trust. In contrast, California has put massive amounts of resources in an array of statutes related to environmental protection and significant progress has been made in multiple areas (e.g. marine protected areas; the CA state park system; economic incentives for limiting greenhouse gases; investments and regulations related to climate adaptation; requirements for regional groundwater management plans across the state; protections for species

³ Instream flow rights are so narrowly construed and so limited in application that they essentially have almost no meaningful impact.

⁴ Arizona Water Settlements Act 2004, Pub. Law 108-451.

⁵ The protections provided by the Clean Water Act are currently under threat due to proposed changes in the definition of Waters of the United States that would reduce protections for most Arizona streams.

and habitats that go beyond ESA)—but, in spite of all of this progress, California still faces significant challenges. The recent devastating impacts of drought and fire in California are evidence that the pace of global change is exceeding the pace of institutional change, even in a state that is working hard to ensure environmental protection remains a priority.

It is time for Arizona to take a look at whether its water and environmental laws are meeting our needs as a society. We have played the “tragedy of the commons” game before, and we know what the outcome looks like. We have eliminated between 70 and 90% of the flowing stream reaches in Arizona (depending on which data one chooses to use). We have seen huge fires consume much of the forested area of the state. We know what failure to protect the environment looks like. And climate change brings an array of new challenges that mean we need to significantly enhance our efforts just to protect what we have left.

III. Looking Forward

It shouldn’t come as a shock that both regulatory changes and actual investments will be required to implement the water management system we need for the 21st century and beyond. There WILL be a future—the question is what does that future look like and how can we leave our children and grandchildren a path forward that is filled with opportunity and optimism? Will they inherit a future that still has options, where natural systems are still functioning, and citizens are not all living inside of plastic, glass and metal bubbles that are disconnected from the natural world?

IV. Water, Climate Change, and the Law – The Case for More Protections

A. Seeds of Hope?

The first step towards a more resilient future, as Robert Glennon has noted many times, is being willing to invest in the Precautionary Principle. We should prepare for the possibility that many of the things that people value about living in Arizona may be lost—and take dramatic steps now to protect what we have. So long as the implementation of the Precautionary Principle preserves more options for the future, as opposed to eliminating them, future generations will still have choices.

Clearly, private property rights will be affected by any effort to protect environmental values, but if the environmental protections are properly conceived, they can also protect private property rights. The concept of “Grandfathered Rights” or protecting existing users is fundamental to the GMA—and one of its selling points in 1980. The folks who have been pushing for an INA in Cochise County are motivated by protecting their own investments. . .all of the infrastructure that has gone into putting permanent crops like vineyards and orchards will lose value if groundwater is no longer available for irrigation. It is the tragedy of the commons, one more time. But if those farms already in place

are protected from competition of new users in their area, existing land and water users are much more likely to support new environmental programs.

We need to act in the same kind of enlightened self-interest that led to bipartisan support for the GMA. Who would have thought that Arizona would develop the most innovative and far-reaching state groundwater management system in the country in 1980? Why can't we be similarly bold in 2019?

Can NGOs, foundations and philanthropy solve this problem on their own? Probably not, but they have been providing increasing levels of leadership over time, especially in Colorado River issues-. There have been tens of millions of dollars of private money invested in supporting the flows of the Verde River and the San Pedro, and significant progress has been made, but knowing what we do about the potential of developments like the Villages at Vigneto—potentially 30,000 new units in the town of Benson that currently has a population of 5,100—there are clearly limits to what can be achieved without a regulatory framework that provides more explicit protections for environmental assets like the San Pedro River.

The GMA has achieved exactly its intended outcome—strong protections for the economies of the major cities within the AMAs. Clearly, regulations that require investments in renewable water supplies have not hurt central Arizona—in fact they are the foundation of its current economy. Is there any reason to believe the GMA can't be amended to add additional authorities related to protecting water-related environmental assets?

B. What Is Actually Possible?

The next step is understanding what is actually possible (politically feasible?) in protecting environmental values in Arizona. Clearly it is NOT possible to pass laws that significantly challenge existing water rights. And just as clearly, the solutions need to be tailored to the hydrology, economics and values of the local communities. This means a state level framework with local implementation, which, though messy and transactional, is clearly possible and more likely to be politically acceptable than standard statewide requirements. This is the whole concept behind having five separate AMAs with different management goals and conservation requirements—the application of a state framework that encourages local feedback and values to be considered in the implementation. This has worked fairly well in implementation of the GMA, and could be expanded to achieve additional outcomes. The only issues with this state framework—local implementation approach are 1) that proactive management within watersheds across the state requires sufficient staff and resources for the process to be successful and 2) strong, inspired and respectful leadership at the state level is essential to a functioning system. It should be noted that the state defunded the entire AMA staff in 2010—firing approximately 60 employees in the AMAs that have never been replaced. In the “inspired leadership” department, there are few who would argue that we are in need of new brave and visionary leaders in this arena.

Assuming those two issues can be overcome, there is the issue of the anti-regulatory environment that we have become accustomed to. But it is important to understand where the anti-regulatory sentiment comes from. Even if there is initially significant opposition to the concept of additional regulatory protection for the environment, that opposition is unlikely to come from a place of actually disliking the environment itself. It comes from the perspective and/or conviction that existing or future water rights or private property values will be negatively impacted by regulation or even by voluntary transactions that are intended to protect the environment. What if we turned this idea on its head, and looked at protecting existing rights and local economies (such as through investments in tourism destinations) as a benefit of protecting the environment? This framing, along with explicit investments in rural economies, might bring even the most skeptical landowners and elected officials to the table.

So, what *is* possible? It is possible to amend the State's groundwater laws to more effectively expand its protections for existing water users outside of AMAs. It is possible to identify establish stream reaches, sub-watersheds or "overlay zones" that have special protections from new groundwater pumping and surface water diversions, with engagement of local communities. These protections could include metering, well-spacing, limitations on the size of new wells, or limitations on the rate of decline that can be caused by new pumping in the area. It is possible to expand the role of the Arizona Department of Water Resources and Arizona Department of Environmental Quality to include authority for monitoring and reporting on the health of specific high-value streams, riparian areas and habitats and the associated biodiversity. It is possible to adjust recharge and recovery permitting criteria to protect water levels in sensitive areas. It is possible to complete the adjudication of surface water rights in the state and expand potential for the state to buy those rights for environmental purposes in a willing buyer-willing seller context. All of these ideas are controversial but it is possible to see a path forward.

Many other ideas are likely achievable, but changes of this nature will require inspired leadership, hard work, a collaborative "big tent" approach, and generosity of spirit. Where are the Mo Udalls, Burton Barrs, Bruce Babbitts, and Carl Haydens of the 21st century? Are we capable of vision and compromise? Certainly, some aspects of the recent conversations related to the Drought Contingency Plan call into question Arizona's capacity for collaborative problem solving. But it is time to think about the End of the Environmental Law—is it a means to an end or an end in itself? What is the *end* that we have in mind? If the *end* is protecting choices for future generations, and protecting quality of life as well as species and habitats, then we have a starting place for a conversation.