Kyl Center for Water Policy at Morrison Institute

ARIZONA STATE UNIVERSITY

Enduring Solutions on the Colorado River

Kathryn Sorensen & Sarah Porter, Kyl Center for Water Policy, Morrison Institute for Public Policy, Arizona State University; John Fleck, Utton Transboundary Resources Center, University of New Mexico School of Law

Introduction

As we work to reduce water use on the post-2026 Colorado River, two paths lie open before us.

One is to incentivize conservation by giving water users the chance to bank saved water for later use. Known most commonly as Intentionally Created Surplus (ICS), and more broadly in a series of increasingly creative implementations as “Assigned Water,” this creates short term savings. But in the long run, the approach entitles the users to take the water back out of the bank.

The other involves permanent reductions – “System Water.” Water use is reduced for the benefit of the Colorado River as a whole.

Investment in Assigned Water, attractive to water managers because of the allure that they can get their water back, has crowded out investment in the more durable System Water reductions that will be needed to bring the Colorado River into balance.

As we develop new operating rules for the river, we need to be mindful of the differences involved.

Accounting for water as Assigned Water is a means to reduce total water use in the short-term but the basin requires a means to reduce total water use over the long-term. ***Enduring solutions*** on the river can only be found by addressing overallocation, which at its most basic means that there needs to be more *unassigned* water in Lake Mead.

Defining and Describing Assigned Water

Assigned Water currently exists only in Lake Mead; it is water that can be delivered independent of the priority system in the Lower Basin and that is held in the reservoir by the Secretary of the Interior for the benefit of a specific entity. Assigned Water also includes delayed water deliveries held for the benefit of the Republic of Mexico that can be delivered subsequently in amounts in excess of the U.S. treaty obligation to Mexico of 1,500,000 acre-feet of water each year. Upper Basin stakeholders are discussing whether, to what degree, and under what terms Assigned Water might be held in Lake Powell, but as yet there is no legal mechanism for its creation or storage.

- Assigned Water creates critically important operational flexibility; it allows its owner to either forgo water deliveries in one year—or pay someone else to—and take delivery of that water during another potentially desperate time.
- Assigned Water is generally insulated from shortage, forfeiture and abandonment.
- Protection from shortage and forfeiture has value; Assigned Water creates ***individual resilience*** for its owner. *Because of this, the availability of Assigned Water appears to crowd out investment in* ***collective resilience*** *in the form of unassigned water—System Water.*
- Assigned Water does not solve the problem of overallocation. Assigned Water is a means to reduce total water use in the short-term but the basin requires a means to reduce total water use over the long-term.
- Under current rules, assigned Water "counts" operationally in the determination of shortage, but not surplus. Thus, it is not operationally neutral and potentially protects lower-priority water right holders to the detriment of higher-priority water right holders.
- In 2023, Assigned Water made up nearly 40% of the water in Lake Mead.
- In conversations about post-2026 operations negotiators are contemplating extending, enlarging and/or enhancing Assigned Water, which exists outside of the existing priority system. In this regard, the conversation involves the reallocation of water in Lakes Powell and Mead.

Background

In the Lower Basin there are many different types of Assigned Water, including Extraordinary Conservation Intentionally Created Surplus (ICS), Binational ICS, System Efficiency ICS and Mexico's Water Reserve to name a few. Different kinds of Assigned Water are subject to various terms and conditions such as the reservoir levels under which it can be delivered, yearly and cumulative totals for creation and delivery, order of its release in different surplus conditions, evaporative losses applied while held in Lake Mead, accumulation limits, and term of expiration. These differences in requirements and conditions in effect create Assigned Water of different priorities, all with delivery rights independent of the existing priority system on the Colorado River. Critically, Assigned Water is generally insulated from loss during shortage, forfeiture, and abandonment.

Originally available just to Metropolitan Water District of Southern California and Imperial Irrigation District under a pilot program created in 2006, Assigned Water is now also available to the Central Arizona Water Conservation District, the Colorado River Indian Tribes, the Gila River Indian Community, the Republic of Mexico and the Southern Nevada Water Authority. Much conversation in the negotiations for post-2026 operation of Lakes Powell and Mead revolves around whether even more and different kinds of Assigned Water will be created, reservoir conditions related to its delivery, whether some could be stored in Lake Powell and to whom this water might belong.

Within the priority system of the Law of the River, the Secretary is limited in her ability to allocate water because it already has an assigned allocation and priority based on land ownership, reserved rights, treaty, settlement or contract. However, by creative interpretation of authority regarding Surplus Water, the Secretary can designate and allocate Assigned Water. When the means of determining the availability of Surplus Water doesn't quite fit it can be changed,[1] and limits on accumulation can be avoided by creating new kinds of Assigned Water that are not subject to those limits (for example, System Efficiency ICS). These sorts of creative interpretations of Secretarial authority regarding Surplus Water can be bolstered by passing federal legislation further ensconcing that authority. That's what the Lower Basin did in a moment of urgency in the 2019 Drought Contingency Plan and maybe for the best. Importantly, reservoir levels have stabilized to some degree since then, which is a very positive outcome. But to be clear, conversations about Assigned Water post-2026 are conversations about the allocation of water in Lakes Powell and Mead.

Critics of the West's priority system of water delivery may well rejoice—nearly 40% of the water in Mead in 2023 was Assigned Water, meaning that Assigned Water is replacing priority to a significant degree. As the expansion of the rights of municipal water providers, irrigation districts, foreign nations and tribes to own even more and different kinds of Assigned Water in Lakes Powell and Mead is contemplated for a post-2026 world, consideration should also be given to how these changes may also inure to the benefit of environmental non-governmental organizations, hedge funds and water

SIDEBAR

Assigned Water and Insulation from Shortage

Assigned Water can theoretically become stranded for long periods of time because generally it cannot be removed from Lake Mead below elevation 1,025'. However, even if reservoir levels drop below 1,025' there is a reasonable expectation of delivery of it at some point when reservoir levels recover since the earliest expiration of Assigned Water is 2036. The Drought Contingency Plan (DCP) requires contributions of water to Lake Mead under various shortage levels; however, states can choose the form of water to be contributed, meaning, contribution of Assigned Water is not a requirement[2] and thus it retains insulation from shortage. If Assigned Water is chosen as the form of DCP contribution, it remains recoverable above elevation 1,110 until 2057, meaning again there is some reasonable expectation of delivery in the future. Altogether these conditions mean that there is some, but only relatively little risk of loss under low reservoir conditions over the long term; Assigned Water is generally insulted from shortage. Assigned water appears to be wholly insulated from the operation of the priority system.

[1] For example, changes in types, calculation and allocation of surplus between the 2001 Interim Surplus Guidelines and the 2007 Guidelines for Operations of Lakes Powell & Mead.

[2] CAWCD intentionally avoided the use of Assigned Water for DCP contributions in its "ICS Preservation" program in which it paid subcontractors to forgo water use as the DCP contribution rather than dedicate its own ICS to DCP contributions. See for example presentation from Arizona Reconsultation Committee Meeting #6, slide 16 at https://library.cap-az.com/documents/public-information/2022-11-04-arc6-presentation.pdf.

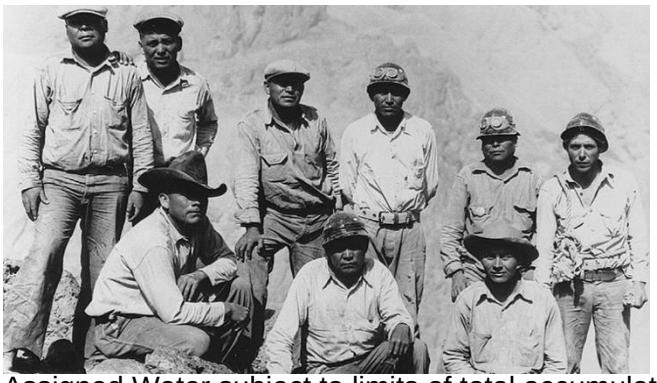
speculators. Those who share John Wesley Powell's fears will understand the implications because the expansion of Assigned Water in Lakes Powell and Mead may bring about the ultimate divorce of priority-based water rights from arid lands in the Lower Colorado River basin.

Impacts and Implications of Assigned Water in Lake Mead

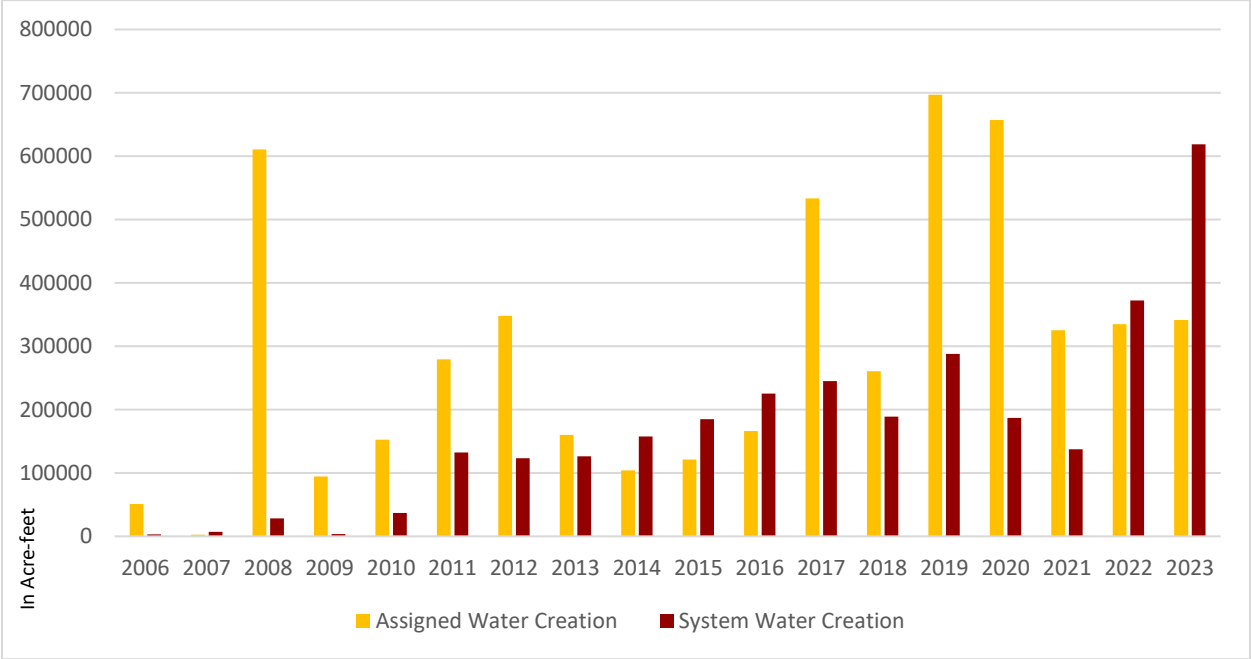
Even though Assigned Water is delivered independent of the existing priority system, both its creation and delivery impact water rights held under the priority system. Under the 2007 Guidelines and the Drought Contingency Plan, Assigned Water is not operationally neutral; for purposes of declaring shortages Assigned Water 'counts' in Lake Mead, but not for purposes of declaring surpluses. Holding Assigned Water in Lake Mead raises reservoir levels higher than they otherwise would be under the priority system, consequently either avoiding or delaying the declaration of shortages. Yet ultimately the piper must be paid. When Assigned Water is released from Lake Mead resulting in a larger total annual delivery to a state than would have been the case under the priority system or to Mexico above the U.S. obligation of 1,500,000 acre-feet, the result is a lower water level, and potentially deeper shortage condition, than would otherwise have been the case. Thus, creating and delivering Assigned Water changes the timing of shortage declarations and possibly the total amount of shortage declared. To the extent Assigned Water delays shortage in one year and creates a deeper shortage in a subsequent year, it potentially protects lower priority water to the detriment of higher priority water.

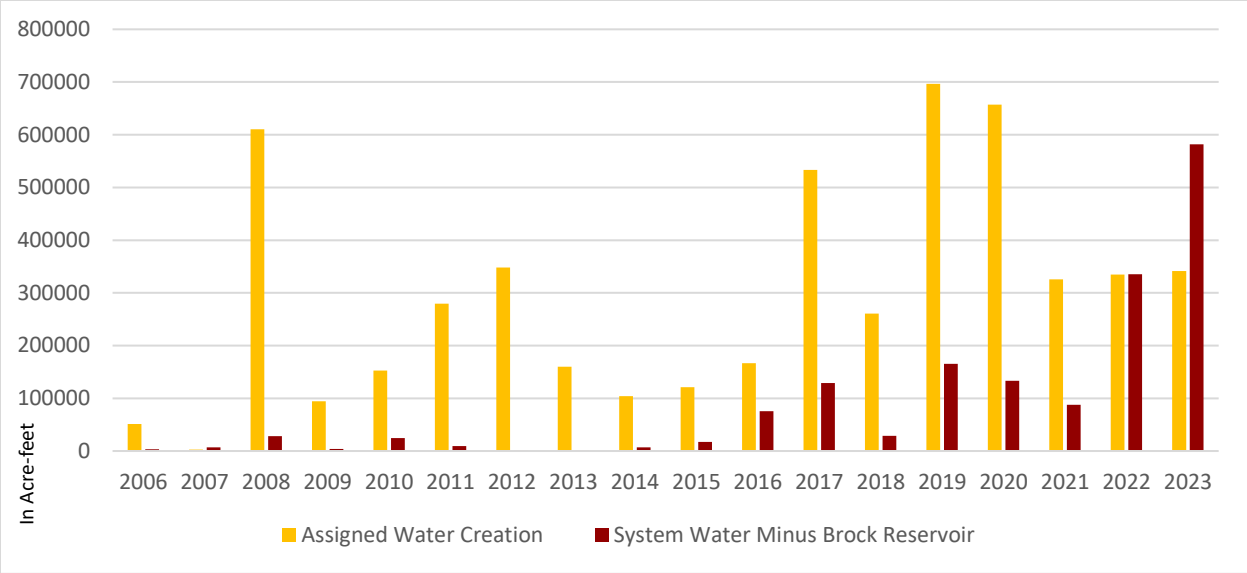
There are consequential implications for the ultimate ownership of water rights in the Colorado River Basin because water leased, conserved through fallowing, or severed and subsequently or transferred retains its priority and remains subject to forfeiture and abandonment (other than water subject to federal reserved rights). Assigned Water schemes allow water conserved through fallowing or otherwise forgone within the priority system to exist outside of that system and generally insulated from shortage, forfeiture and abandonment, and generally available for future use regardless of the impact on higher priority rights.

There are important elements of transparency and fairness at play. The large, powerful players on the River gained access to Assigned Water through direct conversations and negotiations not available to others—meaning, there was no open bidding process or invitation to smaller entities to acquire this valuable water. Apparently, there still isn't. Thought ought to be given to those other stakeholders—smaller cities, farmers, tribes and others—who have made investments and built economies based on the priority system. Imagine a restaurant that operates on a first-come-first-serve basis and a hungry patron who waits patiently in line for the doors to open only to be told that the rules changed while he was waiting and all of the reservations have been claimed through a process from which he was excluded.



The creation of System Water—unassigned water in Lake Mead—bolsters water levels to the benefit of everyone in the priority system. Yet what rational actor would invest in schemes to conserve water that results in System Water when instead he can invest in the same activities and receive a class of water protected from priority system constraints and loss during shortage? The answer is evident: it was not until forms of Assigned Water subject to limits of total accumulation reached those limits while water levels in Lake Mead continued to drop precipitously that creation of System Water occurred at scale. It *may be coincidental* that investment in System Water ballooned just as accumulation limits were hit, but the basic fact remains that Assigned Water is a more enticing investment *for* ***those who can get it*** because it conveys individual resilience on a 9AF/10AF ratio (accounting for 10% assessed losses on Assigned Water) rather than collective resilience at an unknown ratio in the form of System Water.





Note that the creation of Brock Reservoir accounts for *half* of the System Water created to date. Brock Reservoir was built to minimize non-treaty deliveries to Mexico, and certainly this an exemplary form of ***supply-side*** System Water. But without it, creation of System Water through ***demand management*** was minimal at best until relevant accumulation limits on Assigned Water were reached in 2022-2023 and large amounts of federal funding became available.

Assigned Water creates critically important operational flexibility. It allows its owner to either forgo water deliveries in one year or pay someone else to—and take delivery of that water during another potentially desperate time. This flexibility is particularly important for municipal water providers, whose job is to deliver water at the tap in protection of public health and local economies.

Assigned Water's operational flexibility, and its insulation from loss during shortage and forfeiture is so valuable that it was greatly expanded through the Drought Contingency Plan (total accumulation amounts, ability to take delivery at lower reservoir levels, ability to share accumulation space, ability to borrow against it and number and types of entities that could own it). Expansion of Assigned Water is what got the deal done. It was not until relevant limits on total accumulation of Assigned Water were reached that significant investment occurred in unassigned System Water, which does not disrupt and rather protects the priority system.

Post-2026 Considerations

There seems to be growing recognition that Assigned Water that is not operationally neutral creates winners and losers in the priority system. Higher priority water right holders have expressed concerns. Thus, a focus of post-2026 operations is to wind down the use of Assigned Water that is not operationally neutral in favor of Assigned Water that is excluded from reservoir contents for the purpose of calculating shortage or surplus and therefore operationally neutral—dubbed Top Storage by some.

Top Storage seems useful in theory but again, because of its sparkling qualities—operational flexibility and insulation from shortage, forfeiture and abandonment—investment in it will likely crowd out investment in System Water. The end result in an overallocated river system under

the stress of megadrought is shortage for water subject to priority and replacement of water in Lake Mead with Assigned Water.

Assigned Water does not solve the problem of overallocation because when it is deployed we are borrowing against our own bank. While it is a means to reduce total water use in the short-term the basin requires methods to reduce total water use over the long-term. Enduring solutions on the river can only be found by addressing overallocation, which at its most basic means that there needs to be more *unassigned* water in Lake Mead. This can be accomplished through additional involuntary cuts or the voluntary creation of more System Water. Additional involuntary cuts are politically difficult to achieve and System Water is expensive. The federal government bailed out the system with appropriations for System Water through the Inflation Reduction Act, but relying on continued federal appropriations is dicey.

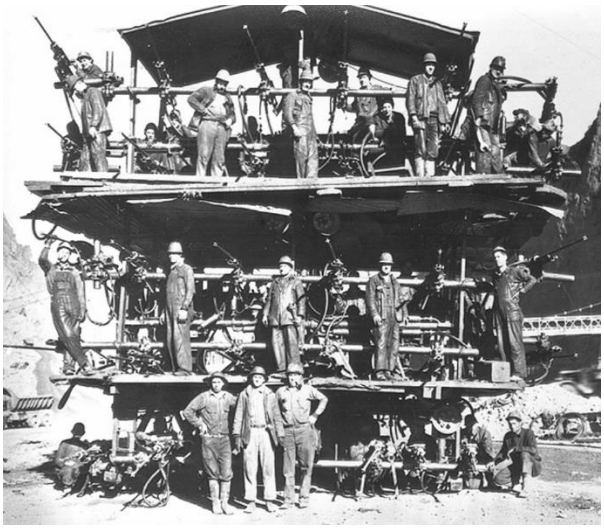
It is indeed helpful to continue to deploy a tool as flexible and alluring as Assigned Water, particularly in the form of operationally neutral Top Storage, so there's no need to throw the baby out with the bath water. A reasonable path forward may be to allow the creation of Top Storage with appropriate guardrails on total accumulation, reservoir conditions of delivery, expiration and other terms, while including a 50% cut for System Water. Post 2026, Assigned Water will be so valuable that entities likely will be willing to take a big haircut to get it, and such a required contribution solves the problem of developing enduring funding for System Water to a significant degree. Maybe ultimately environmental non-governmental organizations, hedge funds and water speculators get a piece, but if so, it will be at the price of protecting and respecting the priority system upon which so many depend.

Thoughts for the Upper Basin

Operational neutrality is key for any Assigned Water scheme post-2026, be it in Lake Mead or Lake Powell, because neutrality makes it very difficult to game reservoir levels or contents and avoids the creation of winners and losers in the priority system. In the Upper Basin, theoretically those at most risk of a call could build a bank of Assigned Water in Powell that is delivered in lieu of an actual call, or, similarly, an upstream user could conserve an amount of water in one year and take delivery of that credited savings in a subsequent year. Both activities are likely to be limited by streamflow issues and environmental, regulatory requirements for river segments between Powell and the upstream point at which an entity with an Assigned Water credit wishes to withdraw the credit from a local stream. Issues regarding accurate measurement of conserved water and shepherding need to be overcome, and the banked water would need to be assessed a realistic and reasonable annual evaporation rate in Lake Powell. Assuming a reasonable evaporation loss is assessed, it may be difficult to correctly time an Assigned Water deposit in Lake Powell such that it is useful for protection against a call and yet does not evaporate over time.

Upper Basin water that goes unused falls into the priority system in the Lower Basin once it is delivered out of Lake Powell. Just as in the Lower Basin, it appears to be the intent of those exploring concepts regarding the existence of Assigned Water in Lake Powell to gain protection from the priority system—to take credit for conserved water and in some manner mark it as a contribution outside of the priority system.

In Summary



Collective resilience is hard to achieve on the Colorado River system. It can only be achieved by reducing total water use very substantially, and of course no one wants to cut their own water use. This makes the achievement of collective resilience very uncertain. Not surprisingly then, those with the power and leverage to do so created an extremely useful tool to carve out their own, individual resilience. The 2007 design of the tool generated very real and potentially negative externalities for others. Whether a similar tool can be designed and deployed post-2026 with improvements that bolster individual as well as collective resilience remains to be seen.

Photos from USBR Archives and Salt River Valley Water Users' Association Web site