Colorado River crisis: Dispute, drought have local implications

by Joe Stone

Two decades of drought conditions in the Colorado River Basin have prompted dire warnings and alarming headlines about climate change and the Colorado River water crisis. Critically low water levels in lakes Mead and Powell now threaten the ability to generate electricity at Glen Canyon and Hoover dams and spurred Bureau of Reclamation Commissioner Camille Touton to issue an ultimatum: On June 14, Touton announced that Colorado Basin states would have 60 days to come up with a plan to reduce water use by 2-4 million acre-feet per year. (An acre-foot of water is the amount needed to cover an acre of land with one foot of water.)

If Colorado, Wyoming, Utah, New Mexico, Arizona, Nevada and California can't agree on a plan, the bureau will use its emergency authority to make the cuts, Touton said.

The Arkansas Basin receives about 130,000 acre-feet of water per year from the Colorado Basin – up to 23 percent of Arkansas River flows, according to Colorado Division of Water Resources data. The Bureau of Reclamation operates the Fryingpan-Arkansas Project, which imports an average of 57,000 acre-feet of water per year. Colorado Springs, Pueblo and Pueblo West combine to import the other 73,000 acre-feet.

Fry-Ark Project water supports local agriculture, cities, towns and industry. Fry-Ark water and infrastructure also underpin the Voluntary Flow Management Program, which supports the multimillion-dollar recreation economies of Upper Ark communities as well as the Arkansas River's Gold Medal fishery.

Water imports to the Arkansas Basin already face risks. Worsening drought conditions could impede Fry-Ark water imports as the project is required to meet minimum streamflows on the West Slope. A call for water on the Colorado River could also curtail water imports.

The 1922 Colorado River Compact divided Colorado River water between Upper Basin states – Colorado, Wyoming, Utah and New Mexico – and Lower Basin states – Arizona, Nevada and California. The compact requires the Upper Basin states, where most of the precipitation falls, to deliver a 10-year rolling average of 7.5 million acre-feet, or maf, of water to Lees Ferry, Arizona, just south of the Utah state line.

Of that water, California is entitled to 4.4 maf, Arizona 2.8, and Nevada 0.3. The compact also established a benchmark of 16.5 million acre-feet (maf) of water per year for Colorado River flows. However, data from the National Oceanic and Atmospheric Administration show that average flows from 2000 to 2021 have dropped to 12.3 maf per year.

To date, the Upper Basin states have consistently met the 7.5-maf compact requirement. At a recent meeting of the Interbasin Compact Committee, Colorado Water Conservation Board Director Rebecca Mitchell shared statistics showing that Upper Basin states have significantly reduced water usage while Lower Basin states have not.

Colorado River Consumptive Water Use (acre-feet)		
Year	**Lower Basin States**	**Upper Basin States**
2019	9,349,000	4,560,000
2020	9,639,000	4,546,000
2021	9,987,000	3,534,000
2022	9,879,000	-------

As the numbers reveal, Lower Basin states' water usage – more than 2 maf per year beyond the 7.5 maf delivered by the Upper Basin – has trended higher, even as the 10-year rolling average dropped to 11.78 maf for 2012-21. Specifically, 2019 saw Colorado River flows of 17.75 maf, a rare yearly surplus of 3.8 maf. In 2020, flows dropped to 9.6 maf, 4.5 maf less than the water used that year. In 2021, flows dropped further, to 7.1 maf.

Even with Upper Basin states reducing their water use by more than a million acre-feet, total water use in the basin exceeded flows by 6.4 maf in 2021.

Colorado officials have indicated they have no plans to make additional cuts to meet the federal mandate. Amy Ostdiek, a section chief with the CWCB, told the Colorado Springs Gazette that sending water downstream from Blue Mesa, Flaming Gorge and Navajo reservoirs represents a significant sacrifice in water security for the Upper Basin states.

At a recent Upper Arkansas Water Conservancy District meeting, Ostdiek observed that, while the Upper Basin states have always lived with the need to limit water use to whatever is available, the Lower Basin states have "drawn down reservoirs instead of limiting usage. … We are living within our means in the Upper Basin, but that's not happening in the Lower Basin."

Ostdiek acknowledged that Arizona and Nevada are taking cuts to their Colorado River water allocations "for the first time ever," but what about California, the most prodigious user of Colorado River water? All seven basin states signed on to the 2019 Drought Contingency Plan, agreeing to reduce their use of Colorado River water, but the Imperial Irrigation District in Southern California's Imperial Valley refused to compromise, according to an Aug. 27, 2021, story by ProPublica. With 3.1 million acre-feet of Colorado River water rights, the Imperial District accounts for 70% of California's compact allotment and is by far the largest single water rights holder in the Colorado Basin.

Imperial District Board President James Hanks expressed the district's refusal to compromise when state officials gathered in Phoenix to sign the 2019 plan: "As champagne is being prepared for debauched self-congratulation in Phoenix, remember this: The IID is the elephant in the room on the Colorado River as we move forward. And like the elephant, our memory and rage is (sic) long."

As the Bureau of Reclamation's mandate now makes clear, the 2019 plan proved insufficient to avert the current crisis, and the Imperial District is indeed the elephant in the room, refusing to recognize the current reality on the Colorado River.

The Imperial Valley lies within the Sonoran Desert and receives less than 3 inches of rain per year. It was uninhabited until 1901, when the Imperial Canal brought Colorado River water into the valley from

Mexico. Because of the desert climate and poor groundwater quality, virtually all water demand in the Imperial Valley is satisfied with Colorado River water. The Imperial Irrigation District delivers that water, and 97% goes to agriculture.

Food production is a critical use of water, but not all agricultural water uses produce food. Growing cotton is one example, and the Imperial District supplies Colorado River water to 463,721 acres of cotton fields, according to the District's most recent crop report. Arizona also uses Colorado River water to grow cotton in the desert. U.S. Department of Agriculture data show that Arizona farmers grew 258,000 acres of cotton in 2021.

Water consumption data from the University of Arizona shows that growing cotton in the desert requires 41.2 inches of water per year. In other words, cotton grown in the Imperial District and Arizona requires about 2.8 million acre-feet of water per year. But while one area of the federal government (Bureau of Reclamation) calls for reduced water use in the basin, another (Department of Agriculture) subsidizes those cotton fields, providing more than $4 billion between 1995 and 2015.

Mitchell and Colorado Attorney General Phil Weiser recently penned an editorial pointing out that Colorado is one of the few U.S. states that administers water rights based on "the availability of water supply in a particular location at a particular time." Colorado's water management system was key to the Upper Basin reducing water usage by 25% in 2020, "a huge reduction in water use of almost one million acre-feet." When added to the "661,000 acre-feet of water provided from Upper Basin reservoirs in 2022, the Upper Basin is providing roughly 43% of its annual water use to help protect Lake Powell."

In spite of the disparities between Upper and Lower Basin water use, officials in Lower Basin states – like Tom Buschatzke, director of Arizona Department of Water Resources, and Adel Hagekhalil, general manager of the Metropolitan Water District of Southern California – responded to the bureau's mandate by urging collaboration. As the numbers show, the Upper Basin states, especially Colorado, have done much more to conserve water than the Lower Basin states, which have consistently taken more than their share of water under the 1922 compact.

Another example of Colorado's leadership in responsible water use is groundwater management. Since 1969, Colorado has recognized the physical connection between surface waters and most groundwater aquifers. The Lower Basin states have not. For example, rivers deposit rocks and sand along their channels and floodplains. River water fills the spaces between the rocks and sand, forming alluvial aquifers. These aquifers are an integral part of streams and rivers; pumping water from them reduces surface-water flows.

In general, Arizona law does not recognize the physical connection between groundwater and surface water. From a legal standpoint, Arizona allows groundwater pumping that reduces streamflows to the detriment of senior water rights. California is just beginning to legally recognize the connection between surface water and groundwater, but groundwater extraction continues to deplete aquifers and cause subsidence, a gradual sinking of land. Ground currently is sinking more than a foot per year in some parts of California, according to ongoing research and multiple news reports.

Finally, anyone reading the alarming headlines would be tempted to believe that the Colorado River crisis is a sudden, unprecedented result of accelerating climate change, but a scientific report published in the May 2007 issue of Geophysical Research Letters indicates otherwise. The authors used paleo-

climate data to reconstruct Colorado River flows at Lees Ferry dating back to the year 762. They document multiple "multi-decadal (Upper Colorado River Basin) droughts" during the past 1,260 years, including one "in the mid-1100s" that persisted for "about six decades."

This means that 15 years ago scientists demonstrated that, even without the effects of climate change, the current 20-year drought was not uncommon and the situation can get much worse, a reality that the Lower Basin states ignored.

"It should be obvious to anyone: Trying to fill a bathtub with the drain wide open is foolish," wrote Terry Scanga, general manager of the Upper Arkansas Water Conservancy District. "This is precisely what the operators of the Colorado River system (lakes Powell and Mead) have been attempting to do for the past 20 years. They have disregarded the increased withdrawals by the Lower Basin states and the ubiquitous arid nature of the Southwest."

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