Cutbacks in Arizona Water deliveries possible

Lake Powell could dry up in as little as six years, study says

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Colorado River runoff forecast keeps dropping

Troubled Colorado River gets new website

Warm weather reducing Colorado River runoff, study finds

Lake Powell has been called “Jewel of the Colorado” by the federal agency that built it, the Bureau of Reclamation.

It’s been a vital force for the intermountain West because of its ability to store vast amounts of water and generate electricity for farmers, cities and towns in 13 states.

But a new study warns that the lake could virtually dry up in as few as six years if the region gets a repeat of the dry spell it experienced from 2000 to 2005.

That could cripple the ability of the Colorado River’s four Upper Basin states to deliver river water to the Lower Basin states of Arizona, California and Nevada, as they’re legally obligated to do.

And it would increase the likelihood of cutbacks in river water deliveries to Arizona, in particular.

The state already is on the edge of shortages for its $4 billion Central Arizona Project.

During the 2000-2005 drought, Lake Powell lost 13 million acre-feet of water and dropped almost 100 feet.

Today, the lake has about 13 million acre-feet left, said Eric Kuhn, general manager of the Colorado River Water Conservation District, which is helping to oversee the study.

The study was financed by the district, which is based in Glenwood Springs, Colorado, along with the Southwestern Water Conservation District in Durango, and four water groups in Western Colorado that represent various interests.

The lake avoided serious problems during the drought because, in 1999, it was almost full.

"Today it's about half full," Kuhn said. "You can't go into a drought like that today if it's half full. Things will have to change in how we do business."

The first warning sign would come if a drought pushed the lake below 3,525 feet, almost 85 feet below where it is now. At that point, Upper Basin states would start delivering water from their other reservoirs to Powell.

If levels dropped below 3,490 feet, there wouldn't be enough water flowing through Glen Canyon Dam's turbines to generate power.

The study is aimed, in part, at trying to help guide efforts at devising a contingency plan, "to keep things from getting out of hand," Kuhn said. The four Upper Basin states — Colorado, New Mexico, Utah and Wyoming — are devising a "three-legged stool plan" to protect Lake Powell.

One leg would involve reducing water demand by farmers and cities in the Upper Basin. The second would step up cloud-seeding programs to try to boost snowfall in the region. The third would transfer some water stored in the smaller Upper Basin reservoirs to Lake Powell.

Officials managing the effort say computer models show that taking these steps would reduce the risk of catastrophically low levels to near zero.

Brad Udall, a water researcher at Colorado State University who's not involved with the contingency plan, is less optimistic. He says such measures "can help, for sure. With modest reductions in flow, they would be meaningful."

But if the region's dry period repeats itself, he said, "you'll need fundamental change." His uncle, Stewart Udall, voted to create Lake Powell as an Arizona congressman in 1956 and shepherded construction of the Glen Canyon Dam that holds back the lake while he was interior secretary in the early 1960s.

"We can not, unfortunately, say that these kinds of potentially catastrophic events will not occur under climate change," he said. "Such is the nature of the climate change beast that we have unleashed."

STORAGE IS POWELL'S PRIMARY PURPOSE

Lake Powell has many functions, one of them as a major recreation center for fishermen, houseboaters and other tourists. But its fundamental purpose under the federal law that created it

is to serve as a water insurance policy for the Colorado River Basin.

Every year, it stores water that flows downstream from the four Upper Basin states. When it's needed it's released to Lake Mead and the three Lower Basin states.

For the Upper Basin states, the reservoir storage has ensured they'll be able to meet their legal requirement under the 1922 Colorado River Compact to deliver 75 million acre feet to the Lower Basin every 10 years. The Lower Basin's legal share is 7.5 million acre feet a year.

In an average year, Lake Powell gets enough water that it can release a bit more — 8.23 million acre-feet a year. In a wetter year, it will release 9 million acre feet to Mead.

"Lake Mead and Lake Powell rise and fall together," said Chuck Cullom, the Central Arizona Project's Colorado River programs manager.

In case of a drought like that of 2000-2005, Lake Mead would get 7.48 million acre-feet, worsening the "structural deficit" that is already causing Mead to drop by up to 12 feet a year due to the Lower Basin states' chronic overuse of river water compared to supply.

The new study's analysis is consistent with the studies and analyses CAP has been doing — and is part of the reason it's been focusing on trying to protect Lake Mead, Cullom said.

The Lower Basin states have already agreed on two short-term programs to reduce their take of water from Mead. They are trying to negotiate a three-state deal that would reduce water deliveries even further, he said.

Whether the six-year cycle of 2000-05 repeats itself "is anybody's guess," said Pat Tyrrell, Wyoming state engineer who has been involved in the Upper Basin water talks. Kuhn's analysis is "the worst case," said Pat Tyrrell, Wyoming state engineer who has been involved in the Upper Basin water talks.

If that does come to pass, Tyrell said he is "fairly confident we can deal with worst case scenario if it ever happens."

It's impossible to even guess the odds of the Colorado Basin getting another six-year arid spell any time soon, said Udall and another longtime Colorado River researcher, Connie Woodhouse, a professor in the University of Arizona's School of Geography and Development.

Given today's changing climate, led by continued warming caused by greenhouse gas emissions, "any knowledge we have of the past that historically would help us make predictions does not help us any more," Udall said.

UNPRECEDENTED CLIMATIC EVENTS

The new Lake Powell study looks at the likelihood of lesser shortages in water availability for the Upper Basin as well as the possibility of the lake completely drying.

Applying data from three droughts from a 25-year period starting in 1988, it predicted that even with little new growth in that basin, a moderate drought would trigger shortages of 350,000 to 500,000 acre-feet.

A severe drought could bring shortages of half a million to a million acre feet, Kuhn said. A drastic drought could bring shortages of one to 1.5 million acre feet, he said.

The study's computer models didn't factor in rising temperatures expected in this region due to climate change.

"I haven't shown the climate change hydrology because it just scares everybody," Kuhn told his district's governing board in June, according to an account of the meeting published in the Aspen Daily News.

The Upper Colorado Commission's computer models have shown that if the Upper Basin states take the precautionary measures they're talking about, the risk of Powell falling to dangerously low levels is "near zero" — even if the basin gets another 25 years of weather like it did from 1988 through 2012, said Don Ostler, executive director the Upper Colorado River Commission. Even if nothing is done, he believes the risk "quite low. I would say less than 20 percent," Ostler said.

During those 25 years, the river's annual flow averaged 13.2 million acre feet — a bit less than what the Bureau of Reclamation's studies have predicted it would carry by 2050 thanks to warming weather and other climate changes, Ostler noted.

The river carried an average of 14.7 million acre feet from 1906 through 2015.

Udall questioned the validity of using the years before 2000 because the years 1990 to 1999 were very wet and not representative of the weather we see now.

"After seeing 30 inches of rain in one day in Louisiana, 20 inches in Houston, unprecedented drought in California over the last 5 years, not to mention the flow reductions in Colorado River," Udall said, "I think we need to seriously consider water-related climatic events that have no historical precedent."

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