How much water is really under Moab? Scientists say it's less than once thought

MOAB — Moab City and Grand County are reckoning with recent studies that suggest their underground water supply might not be as abundant as originally thought.

Now the city is working to solidify an estimate and determine what restrictions or changes might be necessary to keep the growing area and thriving tourist destination hydrated.

In the early 1970s, a study from U.S. Geological Survey estimated there was 22,000 acre-feet of water entering and

leaving the Spanish Valley aquifer system each year. An acre-foot equals approximately 326,000 gallons of water, and Moab city is itself using about 2,300 acre-feet of water per year.

But a 2019 study from the Geological Survey and a 2020 article in the Journal of Hydrology suggest that there's actually more like 13,000 to 15,000 acre-feet of water recharging the aquifers.

There are two main aquifers supplying water to the area: the valley-fill aquifer and the Glen Canyon Group aquifers. The city's culinary water comes entirely from the Glen Canyon Group aquifer, particularly its deeper sections. Douglas Kip Solomon, a University of Utah geologist who helped author both recent reports, told KSL.com that "essentially all" the water recharging the aquifer each year is already being withdrawn for use, about 3,600 acre-feet per year between all entities.

In other words, withdrawing more water would require "mining" the aquifer, or taking out more than is going back in. "There just isn't any unaccounted-for water," Solomon said, "that was somewhat, I think, previously assumed."

Why not just use another source, like the valley-fill? Solomon said the water rights from the valley-fill aquifer and the shallow Glen Canyon waters are already claimed and are

used primarily for irrigation and agriculture. They are treatable, he said, but not as high-quality as the Glen Canyon Group waters.

"Water from the Glen Canyon Group aquifer, especially the deep aquifer that the city of Moab uses, is outstanding quality water," Solomon said. "Just the right amount of salt to be really tasty. It's thousands of years old, it's free of contamination — it's just an excellent source of water supply."

'Paradigm shift'

Solomon said the City of Moab will "have to really think about other sources of water" other than drilling wells into the Glen Canyon Group aquifer. "They may have to think about using water from the Colorado River," he said, but that's an "expensive proposition."

Moab City Councilman Mike Duncan has been advocating for the city to seriously consider water conservation efforts and alternative sources, while also pushing to firm up the science behind the city's supply to determine what a "safe yield" would be from the aquifer each year before the city begins mining it.

Duncan said he wants to convene all the scientists who've been studying the issue sometime this year to see if a

consensus can be reached. "We don't want to err on the side of too much caution," he said, "and we don't want to err on the side of too little."

Moab is still growing, Duncan said, as is Grand County in general.

"I don't want the city to make commitments that we can't fulfill," he said, "so I don't want to wait too long to put a number on safe yield." Finding that number will represent a "paradigm shift" for the area, he said, potentially leading to higher costs as the city is forced to look beyond its borders for a water supply.

Duncan wants the city to start carefully measuring how much water it's using, tracking its future commitments and, if necessary, considering a quota system for future allocations. "The city has plenty of water rights," he said, "but that's not the issue anymore. How much real water do we have to use?"

Other potential sources include Mill Creek, surface water supplied from the Glen Canyon Group aquifers, which is currently used agriculturally by the Moab Irrigation Company. There's also the valley-fill aquifer, but its waters would be expensive to treat, and drawing it down could have environmental impacts. Using Colorado River waters would also be expensive.

Every option has its tradeoffs, Duncan and Solomon agree, but it's important to start this conversation now.

"What we found here, that there's less water than previously estimated — that's a theme that's been playing out across arid and semiarid areas of the world over and over," Solomon said. "It's rare that we find that we previously underestimated the amount of water. It's almost always that we overestimated it. ... We have to be really, really careful about how we use those resources and how we understand them."

Moab City spokesperson Lisa Church told KSL.com in an email that the city is currently "working on some water conservation measures — primarily, at this point, a time of day/day of the week water ordinance for landscape irrigation within city limits — and also the development of a water shortage contingency plan."

"It is expected that other robust water conservation programs/policies will also be considered for the future," she said.

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