A Moab City water main broke in multiple places on Dec. 3 after a failed pressure relief valve allowed high-pressure water to flow through lines, according to city officials. The Moab City Council discussed aging infrastructure and addressing a limited water aquifer as priorities for the coming year. [Moab City Facebook page]

“Groundwater use is close to being maximized—in other words, what we’re using is just about what’s being recharged right now.”

- Chuck Williams

“Years of drought and famine come and years of flood and famine come, and the climate is not changed with dance, libation, or prayer.”

That quote from John Wesley Powell was referenced by Moab City Councilmember Mike Duncan during an earnest discussion of the future for Moab’s water resources at a special meeting on Dec. 16.

In the 1800s, Powell emphasized the necessity of evaluating and conserving water resources in the region. At the meeting, city leaders expressed commitment to tackling critical water issues in the Moab Valley today: water availability, rights, use, conservation, infrastructure, and environmental importance. Considering increasing growth and development in the valley, the advance of climate change, and the uncertainty surrounding the availability of water resources, the issue is laden with increasing urgency.
Ongoing studies

“That’s a fair amount of activity for a sleepy little town known as Moab,” said Moab City Engineer Chuck Williams. Williams was describing the number of scientific studies on the regional watershed, explaining that not only is water a crucial resource in this dry climate, but that the Moab Valley is supplied by a very complex watershed.

In recent years, several studies have attempted to quantify the recharge rates of the aquifer that supplies water to the Moab Valley, including a U.S. Geological Survey report published in 2019 (in which the city participated as a stakeholder), a 2020 scholarly article in the Journal of Hydrology by USGS Groundwater Specialist Phil Gardner and a report from professional hydrologist Ken Kolm, who was hired by the city and published findings from 2018-2020 with more to follow this year.

The Utah Division of Water Rights also analyzed the data within the USGS report and came up with its own set of estimates.

Studies attempt to identify the “safe yield” of the local watershed, meaning “the amount of groundwater that can be withdrawn from an aquifer without exceeding the long-term recharge of the basin or unreasonably affecting the basin's physical and chemical integrity,” according to Utah state code. In hydrology, water use is measured in a unit called an “acre-foot,” which is equivalent to the amount of water that would cover an acre-sized area at a depth of one foot.

Moab currently uses an average of 2,395 acre-feet of water per year, but that number is expected to grow to 3,801 acre-feet per year by 2060, according to growth projections from the Utah Division of Water Rights. To find out if this is within a safe yield, the city must have an understanding of how quickly the aquifer replenishes.
Each of the reports discussed used different methods to try to calculate that figure for the Glen Canyon Aquifer, which provides groundwater for Moab's culinary supply.

Each report produced different values for how much groundwater is available beyond what is already being used. Estimates ranged from zero acre-feet, as estimated in the Gardner report, to as much as 3,500 acre-feet, the high end of a range published in the UDWRi assessment.

Williams explained that his department had to consider each study's methodology and format to make sure the numbers were being compared properly.

“These different reports took different approaches... at this point in time, I'd say they're all good studies,” said Williams. “Looking at them cumulatively benefits us as a city because there's a wealth of information available to help guide policy.”

One thing appears clear: the city is currently at or near safe yield.

“Groundwater use is close to being maximized—in other words, what we're using is just about what's being recharged right now,” said Williams.

The city's current legal water rights may, in fact, exceed the amount of actually available groundwater.

**Vulnerabilities and options**

Though officials and experts agree that more monitoring and research is needed, city staff recommended that the council initiate conservation policies as soon as possible, rather than waiting for more studies to be completed.

Prior to joining Moab City staff in 2019, Assistant City Manager Carly Castle worked for the Department of Public Utilities in Salt Lake City specializing in water issues.

Castle identified four main vulnerabilities in Moab's current water management system: a lack of conservation ordinances, aging infrastructure, shared watershed use and management, and a lack of regulations protecting the source aquifer.

**Conservation ordinances**

Castle noted that water conservation is mandated by the state, which will require a reduction in water use by 2030 and an updated Water Conservation Plan submitted in 2022.
Currently, the city has no strong water conservation ordinances, landscaping and lawn watering restrictions being one example.

“Some of these practices are really straightforward,” said Castle. “These are all low-hanging fruit that any community should have in place before considering anything more drastic.”

She encouraged the council to consider policies already implemented in other places. She said she had dealt with legal challenges to municipal water policies during her time at Salt Lake City, and advised Moab to use well-tested policies to avoid incurring legal costs.

**Aging water infrastructure**

“We all know we have to get real about investing in our water system,” said Castle, who gave credit for the longevity of the city's existing water delivery infrastructure to the Public Works Department staff.

Despite the staff's work, the system's age is showing: on Dec. 3, several waterline leaks kept city Public Works personnel busy all night as one failure triggered several in other parts of the system. Residents and businesses on several city blocks had to have their water turned off while crews toiled to get the leaks under control.

“We have WWII-era pipes, which, believe it or not, are older than me,” Williams said dryly at the Dec. 16 meeting. “Those pipes, they last 'til they don't.”

Williams told the council that several infrastructure projects are already underway and more upgrades are scheduled to be initiated in the next five years as funding becomes available.

**Shared rights**

Moab also has limited control over the management of its aquifer, Castle said, sharing rights with the Grand Water and Sewer Service Agency, the Moab Irrigation Company and neighboring San Juan County.
“We can do everything right on our end, but if other users aren’t prudently managing their water, we may suffer,” Castle said.

Protecting source water

Last, Castle said Moab has few regulations in place to protect source water, in part because some of those sources are located outside the city’s jurisdiction: within the Manti-La Sal National Forest, for example.

Castle recommended that the city continue refining its understanding of the hydrologic system through continuing studies, prioritize water conservation policies, invest in existing and future water infrastructure, pursue ways to protect the aquifer from harmful development impacts, and build relationships with other water users to collaborate in protecting water resources.

Council discussion

Councilmember Duncan presented two “politically motivated” objectives for the council to consider: a recommendation for new ordinances within the year establishing a water metering or quota system of some kind and a commitment to put pressure on the DWRI to come up with a safe yield number and accompanying restrictions.

Duncan noted that Moab is continuing to grow, while water resources appear to be declining and “climate change is rearing its ugly head.”

“How much water do we have to draw on? I think less than you think,” he told the council. He pointed out that this may be a limiting factor in continued development and growth, news that may not be unwelcome to some Moab area residents.

Duncan said the city should have an explicit “will serve” agreement for new developments, expressly stating whether the city will accommodate the applicant with water services, and put a quota on how many connections the city may grant in a year.

Mayor Emily Niehaus emphasized the city’s commitment to continuing to address water issues in the near future.

“I can say confidently that this council is very much in favor of a focus on water going into 2021,” she told staff. “Anytime we talk about development, water always rises to the top as the most important question that still needs to be answered.”
A thirsty valley: City officials take a hard look at water resources nearing max | News | moabsunnews.com