



Upper Colorado  
River Commission



# HYDROLOGIC SHORTAGE IN THE UPPER COLORADO RIVER BASIN

The significance and impact on everyday life.



## Living with the river we have, not the river we want.

The Colorado River water users in the Upper Basin states of Colorado, New Mexico, Utah and Wyoming divert water from the Colorado River and its tributaries. Because there is less snow and a more arid climate, less water flows through the rivers, reducing the water available to support farms, tribes, cities, industries, the environment, recreation and power generation. The Upper Basin experiences these water supply reductions every year. We call these water supply reductions hydrologic shortages. As the Upper Basin prepares approaches to improve the river's health, it is vital to understand how the Upper Basin manages water rights and uses and the impacts of hydrologic shortages.

## Colorado River Water Management and Upper Basin Water Rights

There are more than 125,000 Colorado River rights and 20,000 points of diversion on the mainstem and tributaries in the four Upper Basin states. Each State administers and regulates these legally recognized water rights in real time based on priority, physical availability and legal availability.

Water supplies vary across the Upper Basin every year, with annual variations in snow and rain. Therefore, every year, some water users in the Upper Basin will suffer a hydrologic shortage. Headgates get shut off when there isn't enough water in the system. These cuts are mandatory, required by state law and no one gets paid for the reductions or shortages.

Consequently, we must live with the river we have, not the river we want.

## Uncompensated and Mandatory

Upper Basin hydrologic shortages — called shortages because they are uncompensated and mandatory, required by state laws and administered through the regulation of water rights — vary annually based on water supply. In 2021, the Upper Basin reduced uses by 1 MAF from what was used in 2020. The shortages in 2021 had severe impacts across the Upper Basin, not only on the water uses that were cut but also on communities, jobs and economies.

Water managers in the Upper Basin states administer and regulate water rights annually. In dry years, Upper Basin hydrologic shortages can exceed 30%. Locally, reductions on some tributaries can approach 90% in very dry years, such as 2021.

The impacts of hydrologic shortages in the Upper Basin extend beyond water supply numbers. As these stories show, people in the Upper Basin states feel the pain of hydrologic shortages, impacting far more than their water supplies.



# Stories of Hydrologic Shortage



## Colorado

### The End of the Line: Hannah Cranon-Kersting's Story

#### Gunnison, Colorado

At the end of her irrigation ditch in Gunnison, Colorado, Hannah Cranon-Kersting faces a stark reality: Water rights mean little when the water simply isn't there. For 10 years, her family built up a registered Charolais cattle herd, carefully selecting genetics and building a sustainable operation. Now, they face heart-wrenching decisions each season.

"What worked for my grandpa and dad doesn't work anymore," Hannah reflects. "We're constantly asking ourselves: Do we have enough hay for winter? Do we sell half the herd we worked so hard to develop?" For Hannah, these are not just business decisions but emotional choices that affect her family's legacy.

The lack of water supply and changing climate have accelerated these challenges. Water runs off faster in hotter conditions, forcing ranchers like Hannah to completely rethink their operations. "We're always talking about water, thinking about water. It's tough. How do we handle there simply being less water in the river every year?"

### Managing the Unmanageable: Ken Curtis' Challenge

#### Dolores Water Conservancy District, Colorado

As general manager of the Dolores Water Conservancy District, Ken Curtis carries the weight of delivering difficult news to farmers who depend on McPhee Reservoir. "Being the messenger is unpleasant," he admits, particularly after experiencing eight shortage years since 2000. The stark reality hit hardest in 2021 when the District was unable to release any water. They went from releasing water in one year (2020) to having none the next (2021).

"It's a moving, dynamic system," Curtis explains. "You can try to mitigate, but you can't stop all of it. People understand it's the hydrology and not personal, but when they're facing a crisis of not knowing how to pay their bills, that understanding doesn't pay the mortgage."

The District holds countless meetings seeking flexibility, exploring how to deliver water differently and whether people can pool their limited supplies. "But it all just limits the bleeding," Curtis laments. "In farming and rural communities, water doesn't come from a tap — it's from the river right outside your door. You hopefully live to farm another day."





# Stories of Hydrologic Shortage

## Hard Choices on the Yampa: Mike Camblin's Experience

### Maybell, Colorado

As a third-generation rancher and president of the Maybell Irrigation District, Mike Camblin has witnessed the Yampa River's transformation firsthand. Even with senior pre-1922 water rights, the harsh reality remains: "If the water is not there, it doesn't matter." His operation's decline tells the story: Reducing from 550 head of cattle down to 150, spanning 30,000 increasingly thirsty acres.

The hardest moment came when his family had to sell their registered Angus herd, their pride and joy. "Even in 2021, our drought plan didn't go deep enough. We had no grass, no hay," Camblin recounts. "We had a family meeting and sold all but four cattle. It was devastating." They've shifted to running yearlings now — if water is scarce, the Camblins can move the young animals quickly.

"When others challenge us to conserve, they don't realize we've already been doing it for years. We're giving it everything we've got," Camblin notes. The impacts continue to ripple through their operation, forcing them to manage their land for grass rather than cattle — a fundamental shift in their ranching approach.

## Tribal Waters Run Low: Chairman Manuel Heart

### Ute Mountain Ute Tribe

For the Ute Mountain Ute Tribe, water shortages strike at the heart of both economic and cultural sovereignty. With only 10% of their normal water allocation in 2021 and 2022, the impact has been devastating. "We had to fallow 6,000 acres," Letisha Yazzie explains. "Our corn mill struggled to operate, our cattle herd dropped from 1,000 to 650, and we had to lay off half our workforce."

The tribe's 7,700-acre farm and ranch enterprise, typically sustained by 25,000 acre-feet of water, now struggles to maintain basic operations. Despite receiving minimal water, the tribe must still pay full operations and maintenance fees. The shift to drought-tolerant crops offers some hope, but the future remains uncertain. "If there's no water, we have no way of making money for the tribe," says Chairman Manuel Heart.



# Stories of Hydrologic Shortage



## New Mexico

### Thirty-five percent water shortage

#### San Juan-Chama Project

The San Juan-Chama Project, the major trans-basin diversion project authorized by Congress in 1962 to deliver San Juan River water to New Mexico's municipalities and Pueblos along the Rio Grande, has experienced significant variability in water supply, particularly during the past decade. For example, in 2021 and 2022, the SJCP contractors suffered a 35% shortage in their allocation. This forced them to supplement their supplies with other sources, such as local groundwater sources, which extended the impact of the hydrologic shortage on the San Juan headwaters down to the Rio Grande system.

### Hauling water from remote locations drives up costs

#### La Plata River

The La Plata River is a tributary to the San Juan Basin. There are farming and ranching operations in the valley, and the predominant crops are pasture, alfalfa, and hay to feed cattle. Those ranchers who make a living out of their cow-calf operations have suffered economic damages due to hydrologic shortages on the river. They have been forced to sell most of their herd and, at times, pay for hauling water from remote locations. In 2002, the magnitude of hydrologic shortages on the La Plata River was as high as 80%. In 2018, the shortage experienced was as high as 70%.

### Navajo Agricultural Products Industry (NAPI)

#### Navajo Nation, Northwestern New Mexico

NAPI is an enterprise within the Navajo Nation and is responsible for implementing the Navajo Indian Irrigation Project (NIIP). The NIIP water supply directly comes from the Navajo Reservoir. The storage availability has somewhat attenuated the impact of hydrologic shortages. In addition, in 2017, 2018, 2023 and 2024, NAPI participated in the System Conservation Pilot Program (SCPP). However, in 2016, NAPI suffered about 20% shortage, which is even more significant considering the storage available from Navajo Reservoir.



# Stories of Hydrologic Shortage



## Utah

### Carbon Canal: Risk of losing crops

#### Price River in Eastern Utah

Kevin Cotner is the president of Carbon Canal in the Price River Drainage area in eastern Utah. The canal was constructed between 1907 and 1909 to provide water to agricultural fields west and south of the Price River. Carbon Canal relies heavily on direct-flow water rights. Even with some senior rights, there are years when they experience significant reductions in the water they are able to receive under those rights.

On average, they can run water for irrigation for 90 days each year. In 2021, they only ran water for three days in early May. In 2022, the Carbon Canal only had water for 60 days.

“We are completely dependent on rainfall and snow and how much water we can store,” says Cotner. “We don’t know from one year to the next, and it makes it difficult to plan on what can be planted. The amount of water that is available tremendously impacts the alfalfa and hay, which then determines the amount of livestock.”

When the water runs dry, there is a loss of crop production for the season. However, for long-term crops like alfalfa, there is a risk of losing the whole lifecycle of the crop, especially if you go into the dry fall. This can have devastating consequences.

In eastern Utah, they can’t use groundwater for agriculture. “We can’t control nature and what kind of moisture comes to us. If we don’t have any snowpack, then we don’t have water,” Cotner says. “It takes a lot more coming out of a drought than going into one.”

### Every Drop Counts: Andy Rice’s Efficiency Mission

#### Boulder, Utah

Andy Rice battles a relentless reality on his ranch in Boulder, Utah: “We will have less water. Forever.” Located just outside Grand Staircase-Escalante National Monument, his operation depends on Boulder Creek’s precious flow and the mere 12 inches of annual precipitation that fall on this arid landscape.

To adapt, Rice partnered with Utah’s Agricultural Water Optimization Program, securing funding for a modern irrigation system. “This farm alone has saved millions of gallons of water,” Rice claims. “We’re one tiny farm in one tiny region, but if hundreds of farms can save millions of gallons of water, I mean, we can fix it.”

At least that’s the idea.

For Rice, water efficiency demands that governments make it easier for more farmers to take the leap. “It’s totally realistic to think that if everybody got on board and got more efficient — and if systems were put in place to show a farmer that he can be as profitable or more profitable using less water — billions of gallons can be restored to the [watershed] system.”

# Stories of Hydrologic Shortage



## Wyoming

### Shortages Hamper an Already-Short Grow Season for Mike Vickrey

Upper Green River Valley, Wyoming

Since 1897, Mike Vickrey's family has ranched in Wyoming's Upper Green River Valley. With ever-changing hydrology in recent years, the production on their ranch fluctuates yearly. "Mother Nature does that for us," he says, describing how water availability dictates every aspect of their operation. In good years, they produce 2,500 tons of hay. In bad years, that drops to 1,600 tons or less.

With only one crop being able to be produced in about 45 days in our limited growing season, timing is crucial. "Last year, we shut off on July 6, two weeks earlier than normal," Mike recalls. "We can't go further upstream — this is our only shot." The impacts ripple through the community: Less production means fewer equipment purchases, reduced fertilizer orders and a struggling local economy.

### Feeding the Nation: Tim Redmon's Fight for Water

Southwestern Wyoming

"All our life, we are constantly fighting for our water," reflects Tim Redmon, a multigenerational rancher born and raised in southwest Wyoming. His unique perspective as both rancher and former water commissioner gives him a dual view of the crisis: "You get to see the hard choices people face and how it impacts their families."

Operating a 2,000-acre ranch that typically supports about 1,000 cattle, Redmon holds pre-1922 water rights. Yet even these senior rights mean little when the water isn't there. The harsh reality struck following the dry winter of 2018 in 2019 when drought forced them to buy emergency hay from Idaho at \$300 per ton. "At 2.5 tons per cow in the winter, you can get in the red pretty quick," he explains. "The cows cost more than they can sell for."

His operation represents the backbone of Wyoming's agricultural economy, where 77% of his land serves as vital rangeland. "Without water, there isn't the money to buy tractors and fertilizer," Redmon says. "The whole community suffers. We aren't just raising cattle or sheep. We are feeding the nation."



## Upper Division States Hydrologic Shortage Summary

Due to the variations in water supplies across the Upper Basin every year, water users somewhere in the Upper Basin suffer hydrologic shortages. These shortages are mandatory and uncompensated. In 2021, some locations suffered a 90% loss of water supplies. On average, water users have shortages totaling 1.3 MAF/yr.

1. The UDS manage over 125,000 legally valid Colorado River water rights and over 20,000 diversions on priority, legal and physical availability in real time.
2. Hydrologic shortages occur annually across the UDS. These shortages are uncompensated and mandatory.
3. Multiple methods show significant annual UDS hydrologic shortages every year, with yearly averages of about 1.3 MAF across the UDS.
4. The impacts of UDS hydrologic shortages extend beyond water supply numbers. These painful shortages reduce water supplies to users, impacting communities, jobs and economies.

**Living with the river we have,  
not the river we want.**

**VISIT US ONLINE TO LEARN MORE!**

**[www.ucrcommission.com](http://www.ucrcommission.com)**

