

Water

By Susie Masterson

To us it's liquid gold, for many reasons...

We need it to live; our livestock and crops need it too. We use the water for play. Whether we are powder hounds, river rats or sailing junkies, it's all about water. We all love it, we all want it, we all need to protect it.

We live on planet Earth. Its name means dirt. Yet, 75 percent of the earth's surface is water. 98 percent of Earth's water is in the oceans, making it undrinkable. About two percent of the planet's water is fresh water. 1.6 percent of that fresh water is locked up in polar ice caps and glaciers. Another 0.36 percent is in underground aquifers. Only about 0.036 percent of the planet's total water supply is in lakes and rivers. Grand County is the headwaters of the Colorado River, probably the most managed, controversial, and litigated river in the world.

Starting as a trickle of snowmelt in Rocky Mountain National Park, the Colorado River is 1,450 miles long, it has more than 20 dams, supplies water to more than 30 million people in the United States and Mexico, irrigates around 3.5 million acres of farmland. The river and its tributaries flow through 33 reservoirs, 990 miles of pipes, 230 miles of tunnels, 188 pumping plants, 345 diversion dams, 50 power plants, and 14,590 miles of canals. Almost 90% of the water diverted from the river is for irrigation purposes. California grows over half of the fruits, vegetables, and nuts that Americans consume, much of it irrigated by our water. California is last in line geographically, but not necessarily last in line in rights.

A river of such importance and it all starts here in Grand County. We are host to the first 100 miles or so of the Colorado River, including the 29 miles of the Fraser River. On an annual basis, about 60% of the Fraser River is diverted to the Front Range before it reaches the Colorado River. Just below the confluence of the Colorado and Fraser Rivers, the Windy Gap project pumps up to 65% of that water back to Granby Reservoir where the Colorado-Big Thompson (C-BT) takes 80-90% of the water.

The Fraser River is being overcome with road-traction sand, our streams and rivers have problems with sediment, Grand Lake has clarity issues, algae is taking over many parts of the waters in Grand County, and low flows are making it hard to irrigate. Low flows and warm water temperatures are creating big problems for our fish. How did we get here?

Back in the late 1800s, farmers and people on the Front Range had a need for the water coming from this side of the mountains to their side on the plains. Before the Titanic sailed the ocean blue, water was being allocated throughout Colorado via a complicated series of laws which facilitated transport

of west slope water to people on the other side of the 12,000ft peaks. We didn't think about it because the water was right in front of us and there appeared to be plenty for all. Now we live with laws that are more than 100 years old and growth that requires more water. We need to learn to live with those laws in harmony with the multi-use pressures placed on this precious resource that challenges everyone and every creature to continue to survive.

In 1922, seven states negotiated the Colorado River Compact, which divided the states into two basins – upper and lower – and apportioned 7.5 million acre feet per year to each basin. An acre foot is the amount of water that would fill one acre, one foot deep. An acre foot is 325,851 gallons. The Upper Basin includes Colorado, New Mexico, Utah, and Wyoming. The Lower Basin includes Arizona, California, and Nevada. In 1922 the average annual flow was ten percent to twenty-five percent higher than the current estimates. It was a wet time in history. That is the big picture. We live in a smaller picture of water rights in our backyard.

Controversies over water rights on the Colorado have been an issue among the states for years. In Grand County alone there are over 2,500 claims to water. These include wells, springs, creeks, and the river itself. If a right has a "call on," meaning it is exercising its senior right to the water, upstream junior users must stop diverting water so that it reaches that calling water right. Today, because of all the rights, special arrangements, and reservoirs, it is a serious accounting problem to make sure the correct amount of water is going to the proper place on time. There are people keeping track of every drop of that water. The state engineer is responsible for making sure all rights are used in accordance with the water right decrees. In Grand County two water commissioners work for the division engineer appointed by the state engineer. Their job is to make sure no one is abusing their water rights. Water rights are so important that they are often sold for huge sums of money. You may have the best land with the best view, but even more valuable are the water rights to the river flowing through your land.

What can get lost in this complicated water issue, but is of importance, is what lives in the water itself. Natural river flows allow for a natural cycle of fish and plant life. Diverting water and lowering water levels cause the water to get warmer in the summer, making it hard on the fish. Shallow water freezes more easily in the winter, killing fish eggs. And the river fills with sediment from our everyday life and natural runoff. More

people, more development, more sediment. The sediment in the rivers needs a certain flow of water, at so many cubic feet per second (CFS) – flushing flows – to wash it downstream and cleanse the river and fish-spawning areas.

Grand Lake experiences clarity problems at certain times of the year due to many factors. One factor is that water is pumped against the natural flow from as far as Willow Creek Reservoir to Granby Reservoir into Shadow Mountain Reservoir. The water then flows by gravity into Grand Lake and then through the Alva B. Adams tunnel for use on the Front Range. This process can introduce sediments, particulates, and different nutrients into this cold and clear lake. The warmer water from the reservoirs is producing a cloudy top layer on Grand Lake. A once clear and pristine lake is sometimes a murky issue, in many ways. Volunteers take samples, tests are made, and there are efforts by both sides to find answers to these problems.

Another problem is algae that clouds the lake waters and creates problems for irrigation pumps and water canals. It is a slimy result of man-made and natural disturbances. There are many forms of algae and they can be beneficial in some cases. Flushing flows help keep algae under control.

Water is used in four major ways: energy, municipal, agriculture, and recreation. Energy is produced by the waters that flow through Grand County to the Shoshone Power Plant in Glenwood Canyon, which is owned by Xcel Energy. Dating back to 1902, the plant has among the most senior water rights on the Colorado River. When the plant is in operation and their call is on, the rivers here flow freely as all junior rights have to either curtail their diversions or release water from reservoirs to meet that senior call. We are also affected by urban or municipal life as Denver Water and the Northern Water Conservancy have some of the next most senior rights to most of the rivers we host.

Low water flow affects our agriculture. It makes it hard for pumps to irrigate crops to feed cattle. Cattle and hay for feed are our biggest agricultural products. It takes about 1,857 gallons of water to produce one pound of beef (the water they drink and water used to produce their feed).

Recreation is a huge draw for people in Colorado, both summer and winter. Many of our water laws were drawn around diversion of water out of the rivers and consumptive uses of water. The laws didn't include non-consumptive uses or leaving water in the rivers for use such as recreation or preserving fisheries, but history has evolved these laws. Until recently, recreational use of water had not ranked highly among water-use priorities. In fact, recreational activities generally are a byproduct of other types of water use. A dam is built to store water for municipal or agricultural use, control flooding, or generate power, and the resulting flat-water surface lake then is available for recreation. Today, however, in-stream water activities are a main source of recreation in Colorado, which adds economic vitality and helps keep Colorado a major tourism destination. People move to Colorado's Front Range for work and city life but love to come to

the mountains for the winter sports of skiing and snowboarding and the summer sports of rafting, kayaking, and fishing. Water is at the heart of it all.

The important thing to know is that the many different users of water used to be at war with each other, and some still are. However, maybe for the first time, the various user groups are working together. Ranchers, developers, fishermen, front-range water providers, local governmental entities, environmentalists, and other river users are seeking common ground over the use and protection of water.

Back to the big picture, according to *National Geographic*, "Most of the western part of the United States is in a region where water use exceeds the natural renewable water supply and puts freshwater ecosystems at risk." We are smack dab in the middle of this.

Protecting the river protects this life-source for the millions of people who rely on it. If it starts out healthy, everyone on down the line benefits. There are people in Grand County who are very passionate about protecting the water. We need these people and their passion. The Upper Basin is allocated less than half the *natural flow* of the Colorado River, at most 7.5 of the less than 15 million acre feet per year that flow on average down the Colorado River. However, average flow doesn't always occur; it can range from five million to 24 million acre feet per year. If the natural flow goes down, the Upper Basin still has full obligation to deliver water to the Lower Basin, which means the Upper Basin has to use less. Lake Powell was built for the purpose of supplying water to the Lower Basin. Colorado is only one of the states in the Upper Basin; Grand County has only about 13,500 of the five million people in Colorado. We must protect and respect our water.

I would like to thank all of the parties that were so instrumental and helpful in writing, and understanding, this article and in producing the water illustration (pages 30-32):

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A special tribute to Chips Barry, 66, the long-time manager of Denver Water, who recently died in an accident weeks before his retirement. Chips was known as an exceptional public servant and national leader in conservation.

He will be missed.

