Lake Powell to Lake Powell: Portraits of the Upper Colorado River

By Zak Podmore

The 2013 Colorado College State of the Rockies Report Card
Water Friendly Futures for the Colorado River Basin

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I
John Wesley Powell: The Man of Two Lakes

Lake Powell. You may have heard of it. It's a picturesque, alpine lake nestled in the craggy peaks of Rocky Mountain National Park. Fed by snowmelt and seated in a bowl of exposed granite, the lake lies cold and clear well above 11,000 feet. Lake Powell is the Rocky Mountains at their best: rugged, wild, and remote. No trail makes its way down from the lake-- but a creek does. It flows out of Powell over a series of waterfalls, which pour down a giant staircase of rock ledges. In the alpine meadows below, the stream meanders through swampy grass where moose abound.

If you follow that creek 500 miles and nearly 8,000 vertical feet downstream, you'll end up in the middle of another, more famous Lake Powell that stretches across much of southern Utah. The two lakes don't have much in common save the name and their shared waters. One Powell is the second largest reservoir in the country, filling the sandstone walls of Glen Canyon; the other is about as close to a perfect source of the Colorado River as you can get. Situated well above tree line, this Powell marks the beginning of the North Inlet Creek, which feeds Grand Lake below. Both the lakes take their name from John Wesley Powell, the one-armed civil war veteran who was the first known explorer to climb Longs Peak in Colorado and to navigate much of the Colorado River, including Glen Canyon and the Grand Canyon.

Expedition members Zak and Carson at Lake Powell in Rocky Mountain National Park, Colorado.

Anyone who does an extended raft trip on the Green or Colorado Rivers is compelled to look on J.W. Powell's harrowing first descent of the river with awe. His bags of moldy flour, 50-pound sacks of bacon and coffee, as well as his crew's back-breaking portages, find their way into the imaginations of many river runners to this day. As does the image of Powell himself, riding the desert rapids in a chair nailed to the deck of his wooden boat. To follow the Colorado River is to follow in the tracks of this man, or, in the case of the Down the Colorado (DTC) Expedition, it was to float over 500 miles of river from one Lake Powell to the other.

But as our team of four field researchers for the State of the Rockies Project hiked into the headwaters region of the Colorado River in June of 2012, we were aware that Powell was relevant to our expedition not only because we were about to attempt a nonmotorized crossing of the lands he spent much of his early career exploring, but we were also planning to spend the next few months investigating the topic that became Powell's obsession, a topic that is at least as pertinent today as it was in Powell's time: water in the American West.

The previous winter, Will Stauffer-Norris and I, half of the DTC crew, traced all of Powell's initial 1869 river route as we followed the Green and Colorado Rivers from Wyoming to Mexico. That trip's primary goal was getting from point A to point B without freezing. By the time we arrived at the Gulf of California, however, we'd discovered the ways in which the Colorado River connects the Southwest and we'd seen some of the effects of 30 million people relying on one desert river for water- among other problems- it dries up. In the late 1800s, Powell spent more time in Washington, D.C. than Utah or Colorado, arguing for a responsible settlement of the West and a careful development of its water. He argued for drawing political boundaries along watersheds and against the over-allocation of water rights. Needless to say, not much of his advice was heeded, and water remains such a contested topic in the Colorado River Basin and surrounding areas that the phrase, "Whiskey's for drinking, water's for fighting," has become something of a cliche. As Powell predicted, all too often water in what he called "the arid lands" is synonymous with conflict.

Now, less than six months after Will and I trekked through the Colorado's delta and received a firsthand picture of one of the biggest losers in that conflict --the environment--we're returning to find another source of the river, this time on the Colorado side of the basin. The goal of this trip is not simply to document the river corridor, but to learn about the straws taking the water elsewhere and the politics behind the basin-wide water shuffling. Instead of the sea kayaks, frozen water bottles, and summer sausage that defined our first trip, we opted this time for rafts, coolers full of fresh food, and summer the season, as opposed to the meat. In addition, we arranged over 40 interviews with basin stakeholders along the way and added daily water quality observations to our continued collection of videos, photos, and stories.

We also added two new members to our crew, Carson McMurray and David Spiegel, both of the Colorado College class of 2012. Carson's job--besides surviving his first exposure to whitewater and keeping the group in good spirits

with his much-appreciated antics--is to create an interactive map of the Colorado River. Working with our expedition partners at Blue Cloud Spatial, Carson is using Geographic Information Systems (GIS) technology to post our videos, blogs, photos, and pertinent spatial information to an online map with the goal of creating a powerful educational tool for learning about water issues geographically. David was hired for his exceptional whitewater kayaking abilities and his keen photographic eye. He helped film the video series following the trip, which Will edited. And, of course, the ghost of John Wesley Powell was with us too, making us all the more grateful for our backpacks and dryboxes full of (mostly) mold-free food.

As we hiked up to Lake Powell to begin our expedition, the first major observation we made was of the yellowed hillsides and bare peaks, clear indications of drought. Though the lack of snow the preceding winter would lead to widespread impacts throughout the entire Colorado River Basin, our observation and tentative conclusion could probably have been made by most six-year-old skiers or rafters in the state--little snow means little water. And in a river system that's already diverted to depletion, a drought is a very serious event. Even as we climbed to 9,000 then 10,000 feet, we passed only a few scattered patches of dirty snow, about two percent of the local average for June. That was compared to the previous year's snowpack of over 200 percent. We hauled our small inflatable packrafts high into the park, not knowing when we'd see enough water to float them.

If we didn't pick the best year to go rafting for 500 miles, it was certainly a good year to discuss water. As we pushed our way through brush and climbed over downed trees, we talked about the drought and its implications for our trip. Would the many diversions leave enough water in the river for us to paddle? What would this mean for the state of Colorado and for the river? We didn't have many answers and eventually our talk of diversions, dams, and the threat of water shortages began to dwindle as we became distracted by clear pools and falls of North Inlet Creek. By the time we'd bushwhacked our way through the five miles from our camp to Lake Powell, we'd quieted down completely. We dipped our hats in the lake, waved our flags in Powell's honor, and tried to imagine what lay in store for us between the mountains and the desert Lake Powell.

In 1869, Powell famously wrote, "We have an unknown distance yet to run, an unknown river to explore. What falls there are, we know not; what rocks beset the channel, we know not; what walls ride over the river, we know not. Ah, well! we may conjecture many things." Despite our GPS technology, our proximity to supermarkets, and our planned schedule, this quote found some resonance with us. We may have had some idea of what to expect downstream, but we too faced the same uncertain future, the same thrill of walking towards the unknown. And for the communities that rely on the Colorado River, global climate change makes the idea of heading into uncharted territory an unsettlingly apt metaphor. Much has changed since Powell's ragtag group of mountain men set off onto the waters of the Colorado, not following a map, but making one. But although there is an abyss of sorts between the West of the 19th century and the West of the 21st, what Powell predicted would be the bottom line in defining any westward expansion--water--has proved to be quite prophetic. Water has worked its way into most aspects of western life, even when it's not readily apparent. As we traveled downstream between the Lake Powells, we met with people who painted many different portraits of the Colorado River. They told us how the same water finds its way under mountain ranges, shapes our politics, and floats local economies; we learned about how it grows our food, helps heat our homes, and gives us a place to play. We were also reminded time and again that these connections are tenuous--a growing population in the region and the difficult-to-predict effects of a changing climate make the need to find creative solutions, which protect our environment and our communities more urgent than ever.

Headwaters of North Inlet Creek in Rocky Mountain National Park, Colorado.

But beyond all the strains and all the uncertainty, the river still provided our crew with a line of adventure, a chance to explore land while learning about its many issues. As we took our first steps down from our source, we looked out on a landscape

The expedition members, Carson, David, Zak, and Will at the Grand Ditch in the Never Summer Mountain Range in Colorado.

almost as wild as it was in Powell's day. The thrill of the journey ahead and the thin mountain air left us exhilarated. That night, we unrolled our sleeping bags beneath a spread of stars. While I waited for sleep, I listened to the wind whisper in the pines, and to the creek as it plunged down the nearby cascades. It flowed onward into the night, anticipating our own journey just begun.

II

Why You Should Question Your Continental Divide

Water is normally forced to obey a few laws; namely, flowing downhill and joining other streams, creeks, and rivers until reaching an inland lake or the sea. Enforcing these rules is the continental divide, the Supreme Court of precipitation, which interprets the gravitational constitution and directs water to the most direct course down. This system is quite efficient, and for millions of years there have been few infractions--until recently. Today, the Colorado River is perhaps the number one offender in the world. The continental divide hasn't held the Colorado to the rules for more than a century. It constantly jumps its bed, moves uphill, disregards divides and cuts under mountains. Worst of all, it accepts bribes. As they say in Colorado, "Water flows uphill towards money."

Ask a ranger in Rocky Mountain National Park where the Colorado starts, and she'll most likely point to La Poudre Pass, just west of Estes Park. The continental divide once supposedly traversed the top of the Never Summer Range through which Poudre Pass passes and where the North Fork of the Colorado originates. But if you hike up to this pass with the intention of following the river to the Pacific, you'll quickly find yourself heading towards the Mississippi. This is thanks to the Grand Ditch, a water diversion project built between 1890 and 1930 to support farmers on the Front Range. The Grand Ditch, as the name suggests, is an earthen ditch dug into the slopes of the Never Summers above 10,000 feet that captures melting snow and funnels it from one side of the divide to the other.

This is just the first of many anomalies in the watershed, which make finding the official source of the Colorado less straightforward than might be imagined. We arrived in Grand Lake with five days budgeted to spend on foot in the headwaters. Our intention was to find the source and, if we had extra time, to do some further exploring. But finding the source was not easy. The locals we talked to pointed us in at least three different directions, and all spoke about the "East Fork" of the Colorado, which takes about 60% of the headwaters flow under the Rockies to the Front Range cities via the Colorado Big Thompson Project and its less ambitious cousins such as the Grand Ditch. Uncertain of what to make of this and after much debate, we decided to visit two sources to cover our bases. We hiked to the pass, saw the Grand Ditch, and checked it off our list in case any by-the-books expedition critics wanted to accuse us of going to the wrong source. Then we headed to the less complicated, more pristine source at Lake Powell.

But after a few days along the diversion-free North Inlet Creek, we returned to Grand Lake, where we met with John Stahl and Steve Paul of the Three Lakes Water and Sanitation District. Both Paul and Stahl recited the classic 80/20 problem, which is known by heart for most residents of Grand County. Eighty percent of the population of Colorado lives on the east side of the Rockies. Eighty percent of the precipitation falls on the west side. In order for Denver and other high desert Front Range cities to grow as much as they have over the last century, considerable divide manipulation has been necessary. Nearly every major tributary of the Upper Colorado River is diverted under the Rockies to the east through a number of gravity defying feats.

If the Grand Ditch is really nothing more than an ambitious, high alpine irrigation project, the Colorado near Grand Lake is the world's largest Lazy River: it flows in a circle which, of course, isn't very lazy at all. The laws of the divide, which most rivers obey, save them from exerting unnecessary energy, but circular rivers do not acknowledge these rules. The water that we followed out of North Inlet Creek can take two routes out of Grand Lake. Sometimes it

flows out the historic outlet of the lake and down the Colorado. But when the pumps of the Colorado-Big Thompson Project are turned on, the flow out of Grand Lake is reversed and up to 550 cubic feet per second (CFS) of water is taken through Adams Tunnel to the Front Range. Since Grand Lake is only naturally filled by several small creeks which rarely run at 550 CFS, other sources of water are diverted into the lake through the manmade Shadow Mountain Reservoir.

Nearby, Shadow Mountain spills water down several miles of flowing river to Lake Granby, the next reservoir on the Colorado. After paddling across the lake and reservoir, our hopeful kayak expedition bumped down the rocky channel in this section amidst osprey nests with the intention of following the river. But little did we know, most of the water that flowed between these reservoirs made a lazy loop back uphill from Granby to Shadow Mountain via pump station and canal. We found this out when we made it to the dam that plugs the Colorado at Lake Granby to see a nearly dry riverbed below. Where did our river go? Back up to Grand Lake and under the divide.

Paul and Stahl explained the effects of this complicated circuit in the river. The artificial lake of Shadow Mountain is an average of eight feet deep and is connected to Grand Lake, Colorado's largest and deepest natural lake, which is 270 feet deep on average. After being brought up out of Lake Granby, water is drawn through Shadow Mountain and across Grand Lake. Paul summed up his issue when he said, "Moving water backward against Mother Nature's flow is never a good idea." The water from Shadow Mountain comes with the algae and other pollutants, which thrive in the shallow reservoir, murking up the once crystal clear Grand Lake. The water is then pumped under Rocky Mountain National Park through 13 miles of tunnel and passed on to the 800,000 people and lawns living between Boulder and Fort Collins. Paul and Stahl are advocating for a bypass tunnel that will keep the polluting water out of Grand Lake, but they have yet to strike a deal with the Northern Colorado Water Conservancy District, the operator of the Lazy River at Grand Lake.

This same complication of the divide takes place down the whole spine of the Rockies, in over 20 west to east diversion projects. What's more, there are plans in the works to expand several of these tunnels. The population of Denver and the rest of the Front Range is expected to double in the next 50 years, and without extreme conservation measures or an extreme engineering project, such as building a pipeline from Wyoming or the Missouri River (both have been seriously proposed), the Colorado River will be further depleted.

III
The Hole in the Colorado

The day after we paddled across Shadow Mountain Reservoir and Lake Granby, we found ourselves walking along the highway. Soaring temperatures and widespread droughts were setting records around the country. Half the state of Colorado was up in flames and the river we were supposed to be following was nowhere in sight. We walked along the asphalt shoulder, looking to where the sagebrush and yellowing grass on the hillsides met the rich green and purple of the irrigated alfalfa fields below. The only relief from the sun's relentlessness came from the quick blasts of breeze riding on the tails of each passing semi-truck.

We were heading towards the town of Hot Sulphur Springs about 15 miles downstream of where we left the river at Lake Granby. Why trade floating the cool Colorado for walking on burning pavement? There were several reasons. First, we'd reached what's known locally as the "hole in the river." With this season's low runoff, most of the water flowing into Lake Granby, Shadow Mountain, and Grand Lake

The expedition members crossing Lake Granby in Grand County, Colorado.

Zak, Carson, and David walking along Highway 40 towards Hot Sulphur Springs, Colorado.

was being taken through the Adams Tunnel. The remaining water was incapable of floating our tiny inflatable rafts.

We also didn't want to be caught trespassing. Unlike other states, such as Idaho where both the river and its bed belong to the public, Colorado's law dictates that only the river's water is fair game for kayakers. Property owners can't persecute boaters who float past their land, but if you so much as scrape a submerged rock or get out to portage around a barbed wire fence, you enter an intimidating gray area in the law. Kayaking lore is rich with stories of boaters being driven away from some menacing rapid by an armed and irate landowner, but, like fishermen, kayakers are well-known for their tendency to exaggerate.

Nevertheless, when given the choice between a possible run in with a shotgun or sheriff on the river and the eating of exhaust on the highway, we leaned towards the latter, although our fears are probably as exaggerated as the stories. All the landowners we actually met along the way were very supportive of our journey and their generosity was exceptional. At Grand Lake, for example, we received not only the permission to float a section of river through private property, but we were invited to spend the night as well. All we had to do was ask. But below Granby we don't know who to ask; so we end up walking.

After eight miles, we reached Windy Gap Reservoir where we met up with Rob Firth, the Colorado River Headwaters Project Coordinator for Trout Unlimited. He informed us that the full-fledged "hole in the river" begins at Windy Gap and ends where Troublesome Creek reinvigorates the river's flow 21 miles downriver. According to Firth, this stretch is "a terribly dewatered section that puts this river in a very perilous state." He explains the situation to us as we head downstream to see more.

At Windy Gap, another Northern Water pump station further reduces the river's flow. Denver Water has already diverted much of the Fraser River, which joins the Colorado just upstream of Windy Gap. Although Denver and Northern are required to provide a certain amount of flow to senior water rights holders on the mainstem of the Colorado -- namely the Shoshone hydropower plant near Glenwood Springs and the canals that irrigate the Grand Junction area -- the two water suppliers can do a lot of shuffling in where they release the water to meet these deliveries. Drawing from a system of reservoirs on the Blue River, Williams Fork and other tributaries, Denver and Northern can pump much of the Upper Colorado across the continental divide and then return the required flows lower down on the river. The section between the last major pumping station and where water is put back into the river is considered the "hole."

When we crossed the Colorado River a few miles down from Windy Gap, it looked as if it should be called the Colorado Creek instead. It was clear, warm, and very shallow. Dewatering is threatening this Gold Medal trout stream and the broader riparian habitat.

We watched as a black bear crossed the stream several times, perhaps trying to find some relief from the day's heat. Firth, a former game warden, speculated on the bear's curious behavior and told us that Trout Unlimited's goal isn't simply to maintain quality fishing in the area; it's also to protect the ecosystem as a whole, from the insects to the bears.

Rob Firth, Colorado River Headwaters Project Coordinator for Trout Unlimited, holding an example of the river's macroinvertebrates.

An expedition member paddling down Gore Canyon in Grand County, Colorado.

"If you can keep trout at a healthy level, being the top of the food chain, then everything beneath them has to exist in harmony." Unfortunately, the "hole" is experiencing an unnatural warming of the shallow water, threatening the insect populations that trout and other fish depend on. According to Firth, "38 percent of the macroinvertebrates species have disappeared from this river since they've turned on Windy Gap Dam in 1985."

Firth is concerned with the Windy Gap and Moffat firming projects, proposals from Denver and Northern that would divert as much as 80 percent of the river's flow out of the Colorado. "The river reaches a tipping point," Firth said, "where it no longer means one more bucket out means one more bug out. You may reach a point where one more bucket out means everything crashes and you may no longer have a viable trout fishery."

When we reached Hot Sulphur Springs, we were able to get back in our boats. The river was still too shallow to float without scraping ground, but Firth kindly called every landowner between Hot Sulphur and Kremmling, securing permission for our safe passage. We spent two more days bumping along before we passed the Williams Fork and Blue

An expedition member in the rapids of Gore Canyon in Grand County, Colorado.

Rivers. For the first time since the river's source, we found enough water to attract other boaters, people with a less insane idea of what constituted a floatable river. We were happy to have made it out of the "hole."

That night, we camped near the gates of Gore Canyon where the Colorado moves out of a wide valley and cuts directly into the jagged Gore Range. The mosquitoes were so thick we ate dinner in the tents. Smoke from wildfires to the west enriched the red haze at sunset. Red light lingered over the menacing notch in the mountains, looking like something out of Middle Earth. In the middle of that range lie what are arguably the highest quality Class IV-V rapids on the entire mainstem of the Colorado River.

IV

Gore Canyon: Why Recreate? A Kayaker's Perspective

The next morning, we slid our kayaks into the Colorado River and paddled towards the rapids of Gore Canyon. The surface of the river, slowly meandering its way through flat ranch lands near the town of Kremmling, was alive in the early light. A few strands of spiderweb flew by on an otherwise undetectable breeze. The bows of our boats cut through the water quietly.

After nearly two weeks spent following the Colorado River by hiking on mountain trails, paddling across reservoirs, and floating the mostly flat upper river, we were looking forward to the eight-mile stretch that several locals referred to as "Big Gore Canyon." Of our four expedition members, three of us are paddling kayaks and had been down Gore many times before. Carson, still new to river running, was paddling a packraft. He did well on the few riffles we'd encountered so far, but his plan was to hike around the bigger rapids.

All of us were a little anxious, but the Colorado, even with its increased volume, was in no rush to reach the notch in the mountains that marks the beginning of the canyon. It moved back and forth in lazy turns, flowing over sandbars, past flocks of pelicans and between more fragments of web. One strand in particular caught my eye. It was moving direct-

ly towards my boat as lazily as the river was moving towards the Gore Range. As it floated closer, I saw there was something attached to the end -- an airborne spider dangling from its homemade sail of silk. It began losing altitude quickly, headed for the water a few feet ahead of my kayak. I instinctively took a few strokes towards it, thinking I could catch it on my bow and save it from a watery grave. But I miscalculated and it sailed right over me, landing on the surface of the river. Amazingly, the web didn't settle onto the water but remained in the air, still being slowly propelled by the wind. The spider, seemingly unperturbed, skated across the surface of the water with its paraglider-turned-kite doing the work.

I watched the spider cruise away until I could no longer make it out against the grassy riverbank. Then I paddled on. I didn't wake that morning expecting to watch spiders, and as the current finally began to quicken, my thoughts moved elsewhere. The low grass banks turned to sheer rock walls towering 1,000 feet above us and soon the rapids began.

A few hours later, we emerged from the other end of the canyon, our hair still dripping from under our helmets and the adrenaline subsiding. The three of us in kayaks had found mostly what was expected: rapids forcing us to maneuver quickly between offset boulders, a few waterfall-like drops where our boats catch several feet of freefall before landing in the churning pockets of foam below, plus a few missed paddle strokes, several moments of terror, and a whole lot of hootin' and hollerin'.

For the packrafter, Carson, it may have been a little less fun but more action packed. After piloting several Class III rapids (no small feat for a river novice in craft designed for crossing flatwater in the backcountry), Carson made more than one mad sprint through the train tunnels along the riverbank. He found it easier than portaging the larger rapids over steep rocky slopes, though he had to pray the roar of the river wouldn't be enough to muffle the roar of an oncoming freight train. We all emerged unscathed. But even after all the excitement, even after weeks of hyping up Gore, the moment that stands out most clearly from the day is the sailing spider, bolder in my memory than any of the Gore's other rewards.

I think this is a fairly common experience for people who participate in any sport labeled as "outdoor recreation." Whatever it is that draws people to our public lands -- be it a scenic mountain trail, a prime fishing hole, a slope of fresh snow, or a series of rapids -- isn't always what stays with us when we return to civilization. Sometimes it's the unexpected encounters with a living landscape that bring us back out the next time and not to the trophy catch or finding the best powder turns. Sometimes the sport may serve more as a way to discover that sudden revelation of color, a coyote's gaze, some remarkable geometry of tree branches, or a floating arachnid than anything else. But for the addicted outdoors enthusiast, the sport of choice just happens to be the most interesting way to arrive at that exceptional moment that cannot be planned or pursued. Playing out of doors and away from asphalt differs from recreating in an amusement park or a basketball court in that it takes us away from our homes and business. It takes us beyond the right-angled world we attempt to make useful and allows us to visit, however briefly, the more-than-human world living and dying beyond our control.

David paddling in the surf of Gore Canyon in Grand County, Colorado.

V
Why Recreate? An Economic Perspective

A swarm of yellow life jackets poured out of a barge of rafts and moved upward, single file, to the top of a small cliff. One by one they jumped, letting out a quarter-second, midair yelp before disappearing into the water below. We'd moved a few miles below Gore and had finally switched our kayaks for a 16-foot NRS raft complete with cooler, two burner stove, and a set of chairs. We sat in camp late past noon, watching the yellow lemmings hurl themselves into the river. Although this particular cliff is more than an hour's drive from any significant population center and nearly three hours from Denver, the commercial rafts floated by our camp in an almost unbroken procession throughout the morning. And as our expedition floated downstream towards Glenwood Springs, we saw this scene repeated again and again in various forms -- tubers, rafters, fishermen, and picnickers flocking to the river to find some relief from the heat and to enjoy a day beside moving water.

Unlike municipal, industrial, or agricultural water diversions, recreation is one of the few legally recognized uses of water that doesn't require pumping water out of our rivers. Instead, it encourages making our rivers as accessible, clean, and as naturally beautiful as possible.

The stump speeches of numerous politicians in western Colorado suggest that to be pro-economy you have to be pro-growth, pro-drilling and in favor of new water projects, such as reservoirs and diversions. According to this mentality,

anything that's going to protect the state's natural resources is going to kill jobs and hurt wallets. But there are other voices speaking up to say the direct opposite: that a strong, stable economy in western Colorado is going to be built not on the booming and busting cycles of resource extraction, but on the seasonal, sustainable cycles of resource preservation. People who come to enjoy the Colorado Rockies to raft, fish, hunt, bike, camp, or simply to sightsee are drawn by the recreational opportunities the mountains and rivers have to offer as intact mountains and rivers.

A commercial rafting group cliff jumping near Glenwood Springs, Colorado.

As our expedition team floated down the length of the Colorado, we met with many river experts who are interested in quantifying the value of river recreation. First, Molly Mugglestone, the project coordinator for the river advocacy group Protect the Flows, explained the river's contribution to the regional economy. Mugglestone has spent the last year creating a coalition of over 500 businesses in the Colorado River Basin who rely on a healthy river for their livelihoods. Coalition members range from the obvious rafting and fishing companies to small businesses in tourist towns who need the yearly influx of people to stay in business. Together Protect the Flows and the businesses they represent have been speaking up for the needs of a recreation economy.

"Policy makers have been really receptive to our message," Mugglestone said, "because we represent economic vitality. We represent jobs. We represent small businesses trying to survive with the economy and also with the drought." Helping to quantify the value of a healthy river system is a recently released Protect the Flows study, which estimates the Colorado River generates an economic output of $26 billion annually and employs a quarter of a million Americans. In the state of Colorado alone, $9.6 billion is thought to be produced from river-related business.

During summer months, Glenwood Springs, Colorado, is a convincing case study of the report's findings. Not only do independent businesses survive on river recreation, but the local government has also invested over one million dollars in a public whitewater park in town. When we floated through, we broke out our own kayaks and spent the day on the artificial wave. The park, which was constructed in 2008, consists of several river features that kayakers of all ages play in, surfing the waves and practicing tricks in the holes. During high water, even surf boarders come to ride the artificial hydraulics. Crowds of spectators form on hot summer days, sometimes outnumbering the number of boaters in the water. Glenwood's park is just one of over 20 new Colorado whitewater parks built in the last decade.

Whitewater parks hold a unique place in the Colorado legal system. According to state law, water rights can only be obtained if the water is put to "beneficial use." Traditionally, beneficial has meant agriculture, municipal and industrial uses, or hydropower. But, as the Protect the Flows report demonstrates, recreation makes a considerable contribution to the economy, and today it is possible to obtain water rights for recreational purposes such as a whitewater park.

We met with Nathan Fey, the Colorado Stewardship Director for American Whitewater (AW), to learn more about this issue. Recently Fey has been working with a number of West Slope entities to negotiate with diverters to the Front Range. AW helps represent the recreation community and their needs in these talks. "One of the few tools we have in Colorado to help protect recreational flows is a whitewater park," Fey reported. "A water right for paddling through a whitewater park is being explored all over the state." Such a right is known as a Recreational In Channel Diversion (RICD). As this oxymoronic name indicates, water rights can


David Spiegel
Zak reading under the moonlight on the Colorado River in Colorado.

still only be filed if they can be considered "diversions," which in the case of a whitewater park requires no diverting whatsoever. The beneficial use is found in the flowing river itself, which does more than draw crowds of tourists. "River-based recreation is a huge driver for our economy," Fey explained. "The other piece of that though is that flows which are great for recreation are also really good for the environment." Adequate flows for boaters mean better spawning grounds for fish, a healthier riparian habitat, and countless other benefits for the river's ecology.

VI
Fracking Along the Colorado River

A tangle of pipes, pumps, and green natural gas structures came into view as we rounded a bend in the river a few days later. To make miles, we traded our raft for sea kayaks where Glenwood's tourist-based economy gave way to western Colorado's gas country in Garfield County. All morning, we'd been seeing the telltale signs of the industry as we paddled under pipelines, past drilling rigs, and even by several well pads poised on artificial rock banks a stone's throw from the water. Although we were warned about the heavy gas development along this section of the river, it was strange to see active gas wells within the historic floodplain of the Colorado.

Our flotilla began growing more curious by the minute and when we passed another intriguing looking center of activity, we couldn't help ourselves. We pulled our boats out of the water and struggled up through the thick riverside brush to the top of the bank, not knowing if we were on public land or not. The hillside was cut by a thick metal pipe running down to a holding tank where four white pickups were idling. A door opened and a worker came out to greet us. We asked permission to look around, and he said it was fine. The worker, who looked to be in his early twenties, was in a collared company shirt and jeans. After asking a few questions about our plan to follow the Colorado River from source to sea, he explained that the assortment of pipes, valves, and tanks around us were part of a pumping station, which has been set up to transport used fluid from one drilling site to another.

"Like fracking fluid?" we asked.

"Yeah. They're recycling it for use in a new set of wells," he said pointing up the way towards the scaffolding of a drilling rig a few miles away.

Before floating through this section, we tried to do a little research about the oil and gas industry's use of water. Along with the millions of Americans living near areas of heavy gas development, we were particularly interested in the topic of hydraulic fracturing where a mixture of chemicals and water is sent thousands of feet underground to break up the rock and release trapped gas reserves. But finding reputable information is not easy.

Fracking, like any truly controversial topic, has developed the tendency to repel stable facts with magnetic force. Seemingly simple questions produce wildly different answers depending on whom you ask. For example, how much water does the natural gas industry use in Colorado? According to the Colorado Oil and Gas Association, 0.13 percent of the state's water use went to natural gas production in 2012. Their Water Use Report states: "Colorado's oil and gas industry is committed to minimizing our water use and maximizing our recycling," which sounds reasonable and relatively low impact. And then we hear the other side. According to an independent study from Western Resource Advocates, each new well takes five million gallons of water. Fracking uses enough water annually to supply up to 296,000 people for an entire year. Citing a range of figures for possible


Will Stauffer-Norris
A natural gas rig in Garfield County, Colorado.

water consumption, the report translates the industry's use to its municipal equivalent. "On the low end, that's slightly more than the population of the city of Lakewood (Colorado's fourth largest city). On the high end, that's similar to the entire population of either Douglas, Boulder, Larimer or Weld counties." When the situation is described that way, the impact of gas development no longer appears to be so benign.

Or how about the risk fracking poses to the quality of our rivers, streams, and drinking water? A typical answer from the oil and gas industry will emphasize safety, explaining that current technology is capable of completely sealing off well casings from any contact with underground water supplies. But when homeowners living near drill sites find that their wells have been contaminated or, in some instances, that their tap water is suddenly flammable, the industry's constant assurances seem less comforting.

There is one thing that's agreed upon, however. Any water used for drilling or fracking, even if it's recycled a few times, is eventually taken out of the water cycle for good. While much of the water used in cities or for agriculture is capable of being returned to the rivers and reused downstream, water used for fracking is far too polluted. The only safe way to dispose of it is by pumping it deep underground. Fracking is a 100 percent consumptive use of water.

It was just this used, polluted water that we saw being pumped to the new drill site alongside the Colorado River. The friendly worker explained that the four running pickup trucks, each with one or two men inside, were posted to this site on 12-hour shifts. Their assignment: to watch the pumping facilities and to make sure everything was working properly. A spill of the toxic fracking fluid here, on the banks of the river, could mean a devastated fish and insect population, poisoned crops, and problems with municipal water systems supplying 25 million people between Garfield County and San Diego. The added precautions made sense, but the parked trucks raised the question of why there were pipelines and wells so close to the river in the first place. As it turns out, fracking was exempted from the Safe Drinking Water Act in 2005, and there are few regulations in place for riverside gas development in Colorado. Wells are being built on riverbanks because there are no rules to prohibit it.

The photographers on our crew took out their cameras to begin documenting the site. We'd been talking with the pumping station attendant for over five minutes, but as soon as we began photographing, another man came out from his truck and informed us we were on private property being leased to Halliburton. One photo was snapped covertly before we got back in our kayaks and paddled down past more drilling rigs and well pads.

A few days before, we'd met with Tresi Houpt, the former Garfield County Commissioner and Colorado Oil and Gas Conservation Commissioner. Houpt, who has had over 10 years of experience working with energy policy on the county and state levels, told us that for most of these controversial questions, both sides are probably telling truths. While drilling only uses a small percentage of the state's water, the figures are quite large when they're put in the context of a river system that's already over-allocated (the Colorado River has not connected with the sea for well over a decade, for example). Current technology is indeed capable of making the drilling process safe, she explained, but that doesn't mean it's always implemented correctly. Houpt cited a number of situations where residential wells or streams were polluted by oil and gas activity, stating that, "the water contamination issues that we've seen throughout Colorado have been as a result of human error, not technological error."

Carson near a well pad along the Colorado River.

While the industry constantly refers to an ideal situation that is safe on paper, Houpt pointed out that:

> "There's a great deal of human error that goes along with any industry or anything we do in this world; we're imperfect beings. I think we need to be very aware of where and how we allow oil and gas development to proceed because of the likelihood of some kind of contamination that could occur. There just aren't guarantees."

Natural gas has been hailed as a "clean bridge fuel" and, although it releases less greenhouse gas emissions than other fossil fuels, Houpt is wary of letting the industry regulations remain so lax. "It's important to recognize that we have this tremendous resource available to us in Colorado," she said, "but we should only develop it if we can protect public health, safety, welfare, the environment, and wildlife. If we fall short on that, then we really can't call natural gas a clean fuel."

VII
Agriculture

A man appeared on the porch of the dam keeper's house and began speaking into a radio. He eyed us as we pulled the last of our four sea kayaks onto the shore and started walking our way. It was a little after 8 a.m. and we'd just arrived at the Cameo Dam east of Grand Junction two days after the pipeline visit. A large portion of the Colorado River was being diverted beneath floodgates to Grand Valley agriculture. When the man arrived, he informed us, as indifferently as a cashier wishing us a nice day, that the sheriff has been notified of our arrival. If he'd never seen portaging boaters before, he was already bored with the situation. He told us the sheriff would be there in thirty minutes to give us a trespassing ticket.


David Spiegel

Cameo Dam near Grand Junction, Colorado.

Weighing our options, we attempted to bargain: "Can we just portage the dam and get back in the river?" We could see a launch point not far downstream. The dam keeper radioed his boss but access was denied. We asked how much the ticket will be. He pondered the question for a moment before replying cheerily, "Probably not more than $1,000 each." We went back to the drawing board.

Twenty minutes later, we'd convinced the man to call off the sheriff. We paddled across the river, fought our way through a thick patch of poison ivy, and began dragging our boats down the shoulder of Interstate 70. This dam is far too important to grant access to any group of scruffy kayakers who comes along. We understood. It has provided a livelihood to farmers and fruit growers in the otherwise desolate lowlands of the Grand Valley since 1918. But besides being one of the most productive growing regions in the state, we'd been reaping the benefits of the Grand Valley's long-standing irrigation rights since we left the "hole in the river." The Cameo Dam is able to "call" down over 3,000 cfs of water during the growing season from anybody upstream who has a junior water right, ensuring that a certain amount of water will makes it down to the dam even in drought years. As kayakers, we could appreciate the role the dam plays in statewide water games, even if they didn't tolerate portaging.

But the dam is there to put the water to use. Cameo and the other irrigation structures just downstream can sometimes divert the entire flow of the river, leaving a few hundred yards of near-stagnant pools. This area, once a prime endangered fish habitat, is known as the "15-mile reach." The dewatered section extends from Palisade through Grand Junction before agricultural return flows and the Gunnison River replenish it. When we passed through, the flow dropped from 3,000 cfs above Cameo to less than 400 cfs through the reach.

Agriculture consumes about 80% of the Colorado River. If you've ever eaten a salad in the winter, there's a good chance it was grown thanks to the Colorado's water. Colorado water law operates under a policy known as "use it or lose it." Jeff Houpt, an attorney in Glenwood Springs who specializes in water law, told us that "there is a provision in Colorado law which says if you don't use your water rights, eventually they can be abandoned." Losing a water right to irrigate is, in the vast majority of the Southwest, synonymous with being bankrupted as a farmer. Understandably, farmers will often do what they can to use their full allotment, even if it's not going to actual crop production. There are stories of farmers irrigating weeds in unused fields simply out of fear of losing their right to that water in the future.

Fortunately, water in the West has become far too valuable to the environment and to other users to allow such waste to continue, and there are numerous alternatives being explored. In the summer of 2012, the Colorado Water Trust (CWT) implemented a program to help farmers keep their water rights during drought years while at the same time keeping water in the stream. CWT's water leasing program will actually pay participating farmers to turn off their ditch and keep their fields dry. The water that would have been used for irrigation is left in the river and the estimated


Will Stauffer-Norris

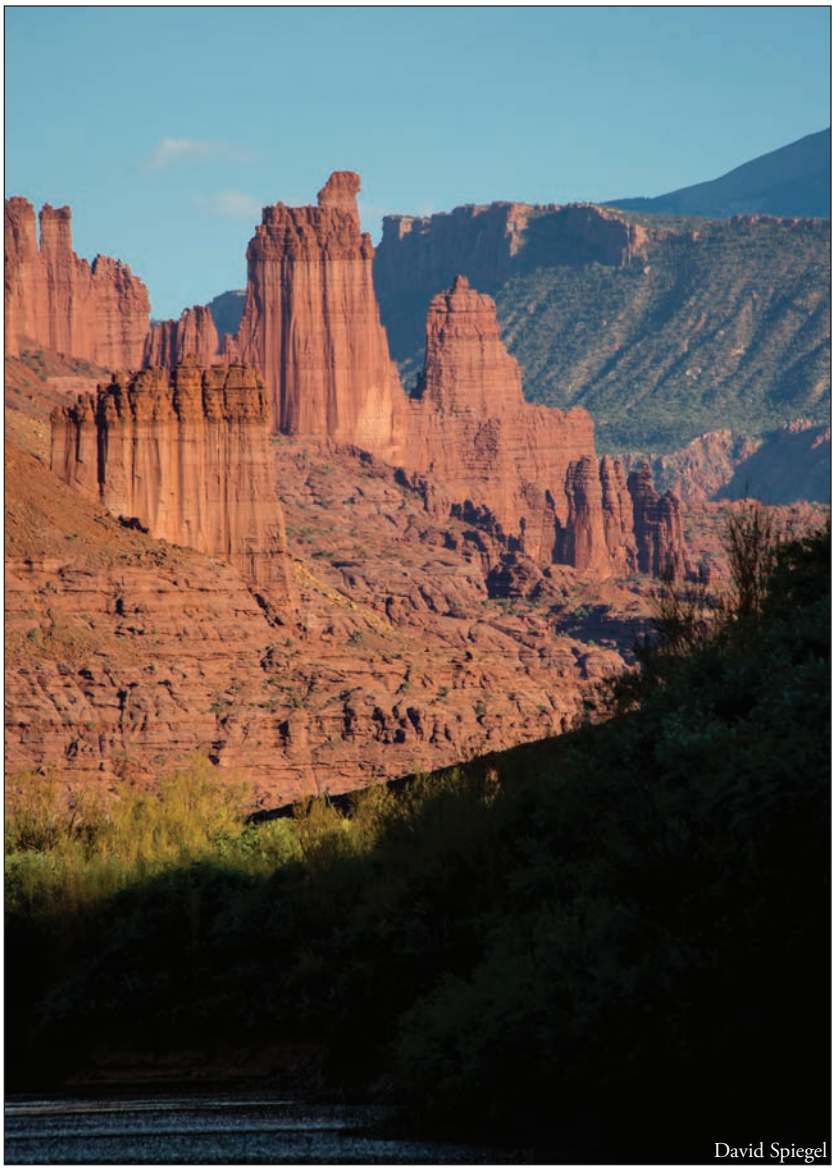
The expeditioners portaging Cameo Dam.

value of their crop (plus a small bonus) is paid to the farmers.

For farmers and fruit growers irrigating with water from the Cameo system, the "use it or lose it" rule doesn't apply in the same way as the rest of the state. Bruce Talbot, a fifth generation fruit grower in Palisade, told us about technological innovation and subsequent local cutbacks in water consumption. "In our own canal company, the Orchard Mesa Canal Company, we've been able to release more water than in the past, a lot of that has to do with sprinkler and drip systems that are more efficient with the use of water as well as the lining of canals." Installing these systems is sometimes against the best interest of farmers who fear losing their water rights by becoming more efficient. Talbot's orchard, however, is part of a cooperative canal company that holds the water right, so individual growers have an incentive to install modern irrigation technology and to save water.

Finding solutions that are good for farmers and for the river isn't as impossible as it once seemed, but there is still considerable animosity between the two sides. We visited a farmer in Fruita who brandished a copy of a Patagonia clothing catalogue with a story on dam removal at us and asked us if we wanted to "read some fiction." "I think it's important we understand our basic needs, which are food and water," he said. "Recreation and maintaining the balance of the environment should be considered, but we have to consider our primary needs first."

Hopefully with new laws that allow water leasing, more efficient irrigation technology, and a willingness to cooperate, we can find ways to grow the food we need without further degrading the river that makes desert farming possible.


David Spiegel

The iconic landscape of the Colorado Plateau.

VIII
Into the Colorado Plateau

After paralleling I-70 for more than a hundred miles, the Colorado River leaves the Grand Valley for iconic desert geology that the Southwest is famous for. The landscape makes a prompt transition from arable valley to sandstone canyon. Redrock walls rise on either side and guide the snowmelt of the Rockies into the Colorado Plateau. From where the river enters that uplift near the Utah-Colorado border to where it finally exits at the end of the Grand Canyon some 500 miles later, the string of wind-swept, water-sculpted cliffs tower over the river in almost unbroken procession. In that interval of rock, the Colorado has spent countless seasons working, cutting into the earth, opening unfathomable time to the desert sun. From shaping ancient round backs of breaching sand dune whales; to sharpening the sheer blocks of limestone that can shred through new hiking boots in hours; to roaring through black core of billion-year-old mountain ranges; the Colorado's protean waters--now flowing red, now chalk white, now gray--mark the continuation of that labor. It's a place like no other.

At the edge of the plateau, we were glad for the chance to get out of the sea kayaks, inflate our rafts for the second time, stretch out, and let the current take us into Horsethief and Ruby Canyons. But we weren't the only people who thought that sounded like a nice way to spend the weekend. There were barges of families, canoeists, kayakers, floating frat houses, bachelorette parties, and overworked rangers also out drifting down the same 26 miles of beautiful flatwater. Ruby/Horsethief provides a good picture of what the desert canyons have become as rafting has exploded in popularity over the last quarter century. Most overnight desert floats now require permits from the presiding public lands office in order to limit the impacts of recreational users. Ruby/Horsethief has, for years, been the exception to that rule, but now the BLM is phasing in a permitting program.

Steve Trimble, a writer and photographer who has spent the last 40 years exploring canyon country, explained the summer crowds we were witnessing in terms of the phenomenon of what he called the "urban pilgrim."

"Many of us have a place we just connect with, that

At the confluence of the Colorado and Paria Rivers.

becomes our spiritual landscape, our spiritual home. People who live in big cities use these places as their refuge, and every chance they get they come down to explore and to just be here. It feels very much like a pilgrimage. I think a lot of people say they're not religious in a normal, conventional way, but they find their spirituality in landscapes like the Colorado Plateau."

Although some of the groups we passed seemed to be on their pilgrimage primarily to propitiate Dionysius with sacrifices of Coors Light to parched gullets, visitors to the canyons do enact different roles from anywhere else upstream on the river. Instead of the fishermen of the headwaters, the adrenaline junkies of Gore, the assembly line tourism of Pumphouse, the gas well operators of Garfield County, or the farmers of the Grand Valley, people often come to the canyons to escape even the slight economic productivity of catching a fresh trout. Those who joined our trip through the canyonlands repeatedly echoed Trimble's statement that this is a place where people come "just to be."

Trimble met us on the section of river below Ruby Canyon along with ten other seemingly civilized folks eager to tag along for our pilgrimage through Westwater Canyon below. In all, we had a geologist, a few educators, two Ph.D. students, a teenage kayaker, a river restorer, a rock star, and a bandit along for what were two of the most flat-out fun days of the trip. Each of the many rapids in Westwater Canyon knocked at least one member of this unsinkable crew from their various rafts, duckies, open canoes, or kayaks into the river for a swim. One by one they were fished out, warmed in the sun, and sent off into the next rapid for more carnage. When the rapids were finished, we hiked to petroglyphs, jumped off cliffs, played games on the beach in camp, and sat by the fire while the swirling stars counted off the dwindling hours until dawn. In the morning, we fried up ungodly portions of bacon, hash browns, and eggs before floating down to the boat ramp where the cars of our short-lived posse were waiting.

An eclectic mix of fellow boaters continued to cycle in and out of our expedition for the next few weeks. We learned about the threats to the plateau in the form of invasive tamarisk trees, further water depletions, uranium mining, and commercial development. But it was hard to visualize the possible impacts of these problems in a landscape so powerfully empty of civilized scars. Trimble told us that spending time in the place itself was a crucial component of any attempt to preserve it. He claimed that both locals and urban pilgrims, though sometimes blaming the other for a place's ills, need to find ways to work together to keep corporate interests from degrading our remaining wild landscapes.

"How do we come together as a community and save the places that all kinds of different people love?" he asked. "The key, I think, is to keep talking, to bring everybody to the table, and then to take the table outdoors. We need to be with each other in a place to find common ground."

Below the town of Moab, the six student researchers for the State of the Rockies Project and the program coordinator met us for a week in Cataract Canyon. After having spent the first few months of summer preparing the research articles that form the rest of this *Report Card*, they were eager to explore the river they'd been learning about.

We met up with the Green River where John Wesley Powell arrived on the first official exploration into this part of the Colorado Plateau. When his expedition arrived at the Colorado River, it was two months into their journey and they'd only seen other people at one tiny outpost far upstream of the confluence. We'd seen a few other boaters, though for the most part, the landscape seemed as deserted as 1869. Where Powell "sifted through musty flour with mosquito netting,"[1] our crew again prepared various Costco-fueled feasts. Where Powell climbed the canyon walls with barometer and notebook, we climbed with cameras and polypropylene. Our crew floated and swam our way through the namesake rapids of the canyon in a single day--it took Powell and his men over a week to portage the same distance.

On our final night in the canyon we prepared our beds on the rafts. Our paddle boat was flipped upside down and the researchers laid their sleeping bags on the floor. The rest of us found spots among the baggage of the other raft or in the packrafts tied onto the boat. We slept as the mirror-smooth current of the Colorado slowed and finally stopped. When we awoke in the morning, we found ourselves between the walls of a mini canyon of stinking, reservoir-deposited silt. We'd finally made it to the second Lake Powell of the trip.

IX
Lake Powell Again: Reservoir by Solar Raft

At Hite Marina, the furthest upstream boat ramp in Lake Powell, we switched crafts again. Leaving behind the rafts, kayaks, and packrafts that had accompanied us in varying combinations since the first Lake Powell, we'd decided to tackle the 160 miles of reservoir before us in something a little less current dependent.

Crossing Lake Powell with the solar powered raft.

Jack Kloepfer of Jack's Plastic Welding in Aztec, New Mexico, had recently teamed up with Solar Works, a Durango, Colorado, renewable energy company, to build an entirely solar powered raft, probably among the first of its kind. He met us at Hite Marina, hauling the recently designed craft behind his truck. Consisting of four solar panels mounted on aluminum poles and doubling as a shade roof, two 22-foot plastic cataraft tubes Jack himself welded together, and a German made electric motor, Jack told us this baby could crank out six whole horsepower. But not often. Given the contingencies of solar angle, cloud cover, and wind (which all too often blows up-lake), he explained the average cruising speed would probably be close to five miles per hour. Nonetheless, we excitedly helped rig the boat.

The expedition team preparing to embark on their solar raft journey.

Jack made his name in the rafting world with the invention of the "Paco Pad," a piece of foam enclosed in the heavy-duty plastic he uses to build rafts. The result is a nearly indestructible, very luxurious camp mattress, which doubles as a raft seat. He outfitted our craft with four of these pads, encircling our cooler of supplies in a sleep-inducing ring of waterproof opulence. When we got the boat into the water, he gave us a few pointers on how to work the motor as well as a very quick definition of watts, volts, and amps. He answered our flood of questions by concluding that it was really all "subjective." He thought it would be better to demonstrate instead of explaining. The trial run ended in a broken propeller, so that when we waved goodbye to Jack an hour later, we were already riding on our only spare prop. The sole alternative to the motor was a set of oars, and the Glen Canyon Dam was still at least six days away.

Soon, we'd learned what Jack meant by "subjective." With careful attention paid to the watts, speed (measured by GPS), and volts on the motor's readout screen, along with multiple attempts to charge the batteries during the high noon sunlight and to ride them into the windy afternoon, we'd formulated more opinions about maximum efficiency than we had people on the raft. A few days into the trip, we eventually found common ground: no matter what combination of tricks we tried, we remained the slowest boat on the reservoir by about 15 miles per hour. All day, every day we ate wakes. We were passed by powerboats pulling wakeboarders, trolling boats pulling fishing lines, and houseboats pulling up to two other motorboats with a string of five jet skis like ducklings behind their mothership.

Luckily, the pads gave us a place to sprawl and the panels gave us some shade. We spent our days studying the map, doing crosswords, and reading. Sara Porterfield, a Ph.D. candidate at the University of Colorado studying river history, was our sole guest for Lake Powell. She brought with her a small library of books on Glen Canyon, the name for the

Crossing Lake Powell.

walls that contain the reservoir. We delved into the stories of what is one of the most controversial environmental struggles in the Southwest. Built at the height of the Bureau of Reclamation's power in the 1960s, the Glen Canyon Dam was fiercely opposed by conservationists such as David Brower of the Sierra Club. Brower had successfully defeated the proposed Echo Park Dam in Dinosaur National Monument at the confluence of the Green and Yampa Rivers, and went on to help stop five more proposed dams in the Grand Canyon. Nevertheless, Brower never ceased mourning the loss of Glen Canyon, which was widely considered to be the most beautiful stretch of the Colorado by the few people who saw it before it was drowned. Writer Edward Abbey famously dreamed of piloting a houseboat of explosives towards the river's resurrection, while many fellow writers have lamented the loss of its slow current, sweeping curves, and towering walls. An array of accounts of the pre-dam canyon speaks with the same soft reverence of the winding side canyons with their hidden waterfalls and hanging gardens. Allies in this fight argue for the dam's decommissioning to this day.

On the other side of the spectrum, over two million people come to motor around on the reservoir's clear waters each year, fishing, jet skiing, and camping on its ever-fluctuating shores. The town of Page, Arizona, was founded to support the dam's building. But the debate between the canyon's aesthetic qualities as a river and its recreational opportunities as a reservoir pale in comparison to the argument about Powell's loss of water--at least politically speaking. Sitting exposed in the desert sun, the reservoir loses about six percent of the Colorado's total annual flow to evaporation, more than the state of Nevada's entire annual allotment. Lake Mead has been below 50 percent of its capacity for years and could currently store all of Powell's waters as well. If the population in the Southwest continues to grow, and precipitation continues to decline thanks to global warming, people will have to decide at what point water becomes more valuable than hydropower and houseboating.

For now, however, the reservoir remains. Our aluminum frame creaked endlessly as we rocked back and forth in the wakes of passing houseboats with names like "What a Sunset!" "Livin' R Dream," and "Sotally Tober." After four days of silent stares, we finally made contact with another group on the reservoir. Three jet skiers pulled up and asked, "Do you know how far it is to the Escalante Arm?"

"About a mile," I replied thinking of the scenes in Sara's books depicting a breathtaking Escalante Canyon.

"Are we in the San Juan arm now? We're trying to get to mile marker 51."

"No, you're on the Colorado," I told their blank stares.

"The Colorado?" They pondered the information for a moment before exclaiming, "Oh, you mean the main channel! Thanks." They took off in a cloud of exhaust towards the red buoy marked 51.

Our first interaction with other Powell goers only left us feeling more out of place. The river we'd followed for 500 miles was gone, sunk deep below our pontoons. Distances were no longer measured by landmarks or river miles, but by Park Service buoys. Tributaries--the San Juan River, the Escalante River--still flowing beyond the reaches of Lake Powell, had now become "arms." We plodded on, the sun propelling us along at the same glacial pace that the Colorado River flowed at for six million years to carve this canyon. We moved at about the same speed John Wesley Powell had moved as his wooden boats floated him past the "curious ensemble of wonderful features - carved walls, royal arches, glens, alcove gulches, mounds, and monuments," that he would describe in his journal from 1869. "From which of these features shall we select a name? We decide to call it Glen Canyon." Those features of the canyon Powell named are now buried beneath waters named after Powell. From dories to combustion engines, much has changed since the West was first fenced and dammed. But beneath our solar panels, we could imagine the beginnings of a new way forward.

On the very first day of our trip, we met with Lurline Underbrink Curran, the County Manager for Grand County. After working for 30 years on Colorado River issues, her tone was firm when she told us that finding "common ground on water issues is the only thing that's going to keep the river whole in the future," the only thing that's going to help us "save ourselves from ourselves in the future." Our 50 days on the river had given us a new understanding of what that common ground might look like. The river is not just what is visible between the banks; it overflows into virtually all facets of southwestern life. The same water can go from filling a creek to running a shower to watering crops to creating a desert rapid. The common ground is what's beneath both communities and canyons, both cities and farms, both industry and wildlife. Common ground is what allows us to see the value of sharing water between multiple needs at the same time, of not choosing one at the expense of the others. "A finite resource can have more than one function," Underbrink Curran concluded. "Why not?"

Citation:

[1]Wallace Stegner, *Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West*, Penguin Books (New York, NY:1953), p. 85.