



Connecting the Drops

Transcript: Reusing Water to Meet Future Demands

December 2018

The American West is grappling with a water crisis. The Colorado River Basin system is over allocated ... that means more water is being drawn out of the river than is being naturally replenished.

The region has been in a drought for almost two decades and with climate change, hotter, drier weather is in the forecast.

Yet demand for water is growing. Colorado's population could increase by 3 million by 2050. The bulk of that population growth will happen along the Front Range.

All of this leaves water managers struggling to quench the thirst of their customers. As we explore in this next installment in our Connecting the Drops series, some urban water providers are looking for ways to do more with less.

The journey of water here in Colorado can be a long and winding one. The water coming out of a faucet here in Denver, likely began its journey high in the Rocky Mountains in the form of snow that ended up in a river on the Western Slope, then it was piped over to the highly populated Front Range, before ending up in your faucet.

From here, it continues on its journey, down the drain, to a wastewater treatment plant and likely downstream to another water user, maybe to irrigate crops on a farm in the Lower South Platte River Basin.

But if you're in Aurora, that water could pay another visit to your faucet - then another, and another.

That's because Aurora has a system that allows water to be reused multiple times. And it all flows through here the [Binney Water Treatment plant](#).

"This is the very first place where water is being treated from the Aurora side, so you have some mixing and chemical addition for flocculants, and then these are flocculation basins so you have kind of gentle mixing and then big serpentine flow through all the way to the end."

That's Erik Tameyer, a Water Utility Specialist, and one of the plant operators here at Binney. This water has come from the Aurora Reservoir, and before that it's come from the Western Slope. This mountain water has never been used before. But after it's treated here at Binney, it is blended with the second stream of water which comes from the South Platte River. Before that, it came from a wastewater treatment plant. This water has been used before ... in fact several times before. And once it's treated and blended with the mountain water it's then piped back out to customers.

"That's the concept, reuse to extinction, that's the actual term we use in the project."

The project in question is [Prairie Waters](#), and as Dawn Jewell, water resource supervisor for Aurora's South Platte River Basin Program explains, the idea was born out of necessity after the 2002-2004 drought. That led to some innovative thinking about ways to do more with water already in the city.

"And that's where Prairie Waters concept came from is 'We have all this water, coming out of metro, what are we going to do with it?' And that's how the program started. Some amazing people had some great ideas to say 'let's reuse what we've got, how can we do that?'"

Colorado's complex system of water laws can make water reuse a complicated thing. Some water rights only allow one use, requiring the water to flow downstream onto the next user. But water brought from another basin can be used over and over says Jewell.

"This water is transmountain, meaning it was never intended to be in the South Platte basin. So this is new water that we've introduced to the river which means it was never part of the water rights to anybody along the river."

What makes Prairie Waters unique is that reused water doesn't come directly from the wastewater treatment plant. Rather it flows back down the South Platte for a few miles before being picked up again and brought back for treatment here at Binney.

"It comes through riverbank filtration wells before it comes into our pipeline, it also can go throughout aquifer recharge recovery site, which is where we put it in the ground and allow it to settle through the gravel and stuff under the ground. So it's

like an underground aquifer then it comes into the pipelines and it will come down here.”

This treatment plant can treat 50 million gallons of water each day. It’s operating well below that level now in winter, but in summer, when demand is high, it’ll ramp up operations.

Water reuse is not a new concept in Colorado. Several water providers already reuse water for irrigation, but supplying reused water for potable purposes is not something that is widespread in the state. Laura Belanger, a water resources engineer with [Western Resource Advocates](#), says that is for a variety of reasons including the cost of infrastructure, but also, a lack of regulations.

“There are no federal regulations right now. If you think about it, if you are a water utility, that’s really expensive to put those treatment processes in place. And then what if the state or what if the federal regulators come out in a year or in two years and the requirements are different than what you put in place? So people really want to know what would be required of them so that they can invest wisely in these systems.”

The Colorado Water Plan identified water reuse as something that can help the state close its water gap. Belanger says it is unlikely we’ll see any federal regulations around water reuse, but the state of Colorado is close to establishing some.

“We’re in the second phase of a project that we are working on with [Water Reuse Colorado](#) and that is working to develop a framework of what the regulations could look like in the state. We’re working really closely with our state regulators, with your large water utilities that are interested in reusing for drinking water purposes and we’re outlining how regulations, policies and guidelines could look like that could be implemented by the state. That will help provide utilities with the criteria that they would know would be expected of them as they’re looking at this as a viable water supply.”

This could be the ultimate water cycle, water being used by the same utility over and over again. But aside from the cost of infrastructure and lack of regulations, public perception is critical. With Coloradoans taking pride in their pristine Rocky Mountain water, the idea of drinking water that’s been through the system a few times may be a hard sell. Back in Aurora, Dawn Jewell says it’s something the city worked hard on.

"The largest challenge was actually getting people to be comfortable with the idea of reusing water in general. It has a negative connotation with it, which is not really something that is valid. If you consider water throughout the United States, that water is used, put back in the river, used, put back in the river - it's a common concept throughout the United States. So the idea, here where we're taking advantage of the fact that we do put that water back in the river, that was challenging for a lot of people. So there was a big public information push on spreading the word and helping people understand that, we're not tapping into your toilet, we are actually using water in the river that's already been cleaned to the standards of the river. The same water that you've been kayaking in, that's what we're pulling back to be able to reuse."

But any change to water use in the state will impact another water user. So if less water is being sent down the South Platte River because more is being reused upstream, there will be an impact. Something Laura Belanger with Western Resource Advocates recognizes.

"Irrigators lower down on the South Platte have long been concerned about big Front Range utilities increasing their reuse and then decreasing return flows in the South Platte River and that has an impact. There are your irrigators who have been able to use that water historically and it is going to be decreased. That said, those irrigators recognize that those Front Range utilities have the legal right to reuse those supplies and so folks are understanding and accepting of that."

And as Belanger points out, water reuse is only going to increase as the state grapples with ongoing drought, climate change and growing populations.

"There are no new water supplies in Colorado and yet our population's projected to double by 2050 and with climate change we're actually seeing our water supplies decrease. And so we have to be really creative and figure out where we're going to get this water from. So water reuse is a really important way that we can help meet these future demands, help leave water in the streams and rivers that we all really love so much and help ensure that we are providing you know the quality of life that we all love having in Colorado including keeping our economy strong and robust."