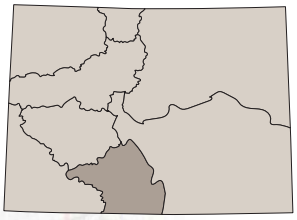
Rio Grande Basin



The Rio Grande Basin faced the dual but related challenges of compact compliance and the need, in some parts of the Basin, to bring groundwater use down to sustainable levels.

Compact Compliance

The Rio Grande Compact was ratified in 1938, with delivery obligations based on each year's flows in the Rio Grande and Conejos River Basins. From the 1940s to the early 1960s, increases in the efficiency of surface water use and the resulting decreases in irrigation water returning to the river, along with a lack of compact administration, led to Colorado routinely failing to meet its annual compact obligations. This in turn led to a 1967 lawsuit from Texas and New Mexico to force Colorado's compliance with the compact. To settle this lawsuit, in 1968 Colorado agreed to meet its annual compact obligations each year until the debt was repaid. To achieve compliance, the Colorado Division of Water Resources began to actively curtail surface water use on the Rio Grande and Conejos Rivers in order to send water downstream to the lower compact states. This active curtailment of water rights for compact compliance was something that had not previously been done. This led to daily curtailment of surface water rights during the irrigation season, almost all of which were senior to the compact, while newer wells were able to keep pumping, contributing to social divisions in the Rio Grande Basin.

Rio Grande Basin

The Closed Basin Project, which withdraws shallow groundwater from a hydrologically "closed basin" and delivers it to the Rio Grande River, was built in the 1980s in order to help with compact compliance. This project was expected to deliver 60,000 acre-feet/ year, but has never delivered more than 40,000 acre-feet/ year and has averaged 17,300 acre-feet/ year, with amounts diminishing over time.

The wet period in the 1980s brought Colorado into compliance with the compact when Elephant Butte Reservoir in New Mexico spilled.

Groundwater Sustainability

The drought of 2002 and subsequent dry years have brought concerns of over-use of the aquifers and impacts to river flows by groundwater use to the forefront. In 2004, authorized by state legislation, locally-developed efforts began to form subdistricts, each with its own plan to address well depletions. Water users in the region known as Subdistrict #1 initiated a system to replace and prevent injurious depletions to senior surface right holders and restore depleted aquifers to an agreed-upon sustainable use level. This first subdistrict charges irrigators a fee for each acre foot of groundwater they pump and uses the payments generated by pumping, along with federal conservation program funding, to pay other irrigators to fallow their land or to purchase water rights and land. This brought some initial success at recovering the depleted, unconfined aquifer of the Closed Basin. However, a combination of renewed drought, high commodity prices that make fallowing payments less competitive, along with other social factors have reversed these gains. The other five subdistricts have developed and are implementing their plans for groundwater management. If the subdistricts' efforts fail to make sufficient progress in recovering the aquifer, the State Engineer can disapprove the annual replacement plans, resulting in the curtailment of wells.

Experiences

Veterans of the Rio Grande Basin's efforts to develop its own solutions for balancing water supply and demand and avoiding state-mandated curtailments point to several factors that have contributed to the

degree of success experienced so far. These include foresight, leadership, and the capacity to develop and implement home-grown solutions. They also note that more options would have been available if action had been taken earlier.

Confronting Limits

Interviewees reported that it took time for the basin's water users to come to terms with the limits of their surface water supply when compact administration first occurred. One interviewee, a farmer, remembered that,

> *In 1969, '70, and '71 people that had been [farming with surface water] were not happy. "The state is curtailing my senior water right to make compact delivery and I'll never survive this!" We kind of worked through it and figured out too how to survive it. Probably depends on your perspective… But it set the stage for those crucial conversations going forward between groundwater [users], surface water [users], and the state on interconnectivity between all of those and then layer in compact delivery.*

Interviewees explained that the initial confrontation with limits was painful, as water had always been perceived as plentiful. Curtailment was also painful because it forced irrigators to change their relationship with their water supply and instead of seeing possibility in the abundant water, to watch water flow by, which one interviewee described as "the cost of irrigating in an upstream state."

As the previous quote illustrates, compact administration set the stage for future conversations about interconnectivity between surface and groundwater. A farmer and water manager described the hard reality Subdistrict #1 is facing.

> *The community we live in is just out of balance from a water perspective, where you consume more than is supplied. For 20 years, since 2002, it's been on a pretty steady decline. And it's so challenging, given [that] in the Rio Grande Basin, our economy, our culture, our communities are all built around irrigated agriculture. How do you survive?*

In a public talk called "A Tale of Two Rivers," Rio Grande Water Conservation District (RGWCD) General Manager and Colorado State Senator Cleave Simpson described the subdistrict process as a time of "rebalancing," bringing use back in line with availability of supply as our knowledge and understanding has increased.

One farmer and water manager noted that once the state announced in 2015 that its models were sophisticated enough to reasonably assess the impacts of groundwater withdrawals on surface water, the realization began to set in that the state now had the tools to justify turning wells off, if necessary. This helped turn water users' attention towards developing solutions.

> *Most of us have reached the point [of recognizing], undeniably, that what we pump out of the aquifer system has an impact on the surface water system. And when people came to that realization, it was like, "All right, let's figure out how we fix it and kind of move forward."*

Energy that had been spent on denying or fighting the need to manage water differently could then be channeled into developing new management strategies.

Role of Measurement

Improving the measurement and tracking of both surface and groundwater use has helped water users develop an understanding of their own water use, as well as the impacts of the use on the system as a whole. For surface water users in his part of the Basin, a farmer and ditch manager, explained:

> *In 2009, we were operating exactly like we did when the river was running in 1909. We had not advanced, we had not moved. And quite frankly, you can't manage what you don't measure. So we began a very comprehensive grant and loan [program], and we started putting telemetry and good, accurate measurement on all the head gates along our river to help the Division of Water Resources, because it was easy to blame them for messing up. But [before we installed the new devices] we weren't doing anything to give them any better data.*

He described getting better data through measurement as important for both improving water management and limiting disputes.

> *The device doesn't lie. You put that weir or that clock in there, and you start measuring water. Now you're going to make better decisions as a farmer, as a manager, as anybody. We have noticed that the more measurement, the better we're managing. Honestly, we have less arguments about decisions because we have data to back up why we're doing what we're doing. Before, it was all speculative.*

Another farmer, the 5th generation of his family on the land, described both coming to terms with limits and having accurate measurements of water use as vital to the valley's future.

> *If we're going to continue meeting compact obligations and avoid a lot of issues, one of the things that we need to do is just really, really start thinking about how we make the best of a limited water supply. So we can continue to meet obligations but keep our economy going.*

He mentioned several ideas for managing with less water while still safeguarding the local economy, including optimizing water management and growing less thirsty crops.

The enhanced understanding of water use and supply conditions provided by accurate measurement is an important foundation for both individual and collective decision making.

Hazards of Delaying Action/ Going to Court

Interviewees expressed regret that their options for how to comply with the compact had been limited by waiting until a lawsuit forced the issue. Having learned from this experience regarding surface water, water users are now working to develop their own solutions ahead of state mandates for wells.

The farmer and ditch manager quoted above said that between 1938 and 1969, there was an assumption in his area that return flows would always pay the compact – which no longer held true after surface water use management became more efficient.

> *You had all of that time between 1938 and '69, that we lollygagged and got ourselves in a bind. And then, from 1969 on, basically, New Mexico had their foot on our throat and we had to comply. We messed up by not starting from the beginning and complying. A million acre feet on a river that totally only runs 220,000, that's insurmountable.*

He continued, noting that inaction was its own kind of decision:

> *All of the water users voluntarily, by inaction, subjugated their rights to the Division of Water Resources on how that compact would be administered… It didn't have to be curtailment. We could have bought up some junior rights… we could have set some regulations on how much efficiency we would allow in our ag applications.*

The fifth-generation farmer echoed the preference for locally-developed solutions, which requires action ahead of a state mandate.

We would much rather solve our problems ourselves than have the State step in. And I think what happens, the State steps in, and a lot of times one solution solves the problem. They'll cut everybody back 5%, 10%, 20%. But it shouldn't be like that.

He was speaking from the perspective of working on one of the subdistrict plans to keep groundwater use at sustainable levels, working proactively to develop measures to reduce water use while keeping the region's agricultural economy strong.

Scaffolding for Proactive Solutions

When the Rio Grande Basin has made progress in developing its own solutions for balancing water supply and demand, it appears to have been at least in part because the basin had the scaffolding in place for developing proactive solutions. This scaffolding included the community will to develop their own solutions, the confidence from previous experience that they could succeed, and a strong organization with the capacity to convene people to develop and implement the solutions.

A state employee involved in water management recalled that the community's desire for a solution was intensified by the extremely dry conditions in 2002 and 2003, after earlier attempts at developing groundwater rules in the 1970s had failed to produce results.

> *I can remember going to big water meetings in 2002 and 2003 where we had a lot of farmers and ranchers in there and just talking about the drought situation and just that we needed to do something differently, not only for groundwater… but surface water flows too. [It was] just [a] really bad situation.*

A farmer and water manager also recalled the role of the 2002 drought, as well as a strong desire among the community to take a hand in guiding their own future.

> *I admire the constituents in what's now sub-district one coming together when they didn't have to, from a state regulatory perspective. They came together because their supply of water took such a huge hit in 2002, and they recognized that, "Look, if we don't actively come together and think about how we manage this aquifer system, we're just going to pump it to the bottom. And then either the folks with the deepest pockets or the deepest wells are going to be the only ones left here, if we're not careful."*

When it came to coming together to develop the subdistrict plans for groundwater sustainability, interviewees referenced the basin's previous experience with organizing to resist water exportation as an important precedent that had built relationships, trust and the confidence that they could prevail. Also important was the existence of forward-looking leadership and a well-organized and effective organization to support the development of a home-grown solution: the Rio Grande Water Conservation District (RGWCD).

The farmer and water manager quoted above described the RGWCD's stance and ability to encourage work towards preventing the traumatic well shut-offs imposed on other basins like the Arkansas and South Platte.

> *The Rio Grande Water Conservation District board watched that and said, "We got to find a different path… At some point in time, that's going to come here, let's get out in front of this as a community and see if we can come together and build a solution on our own."*

The state employee involved in water management reflected that it took extreme patience and time to make sure all the water users could learn about the issues and why developing their own plan mattered when it came to avoiding state mandates. He said it was also important that the state left the details up to local stakeholders.

> *It wasn't saying that we need to do X or Y, it was basically saying something needs to be done, what do you think? Do people have any ideas? And that really, I think, was where the subdistrict concept came from.*

The state was able to leave the details up to the local stakeholders because they were already taking steps to address the issue. The RGWCD was then able to nurture and support these ideas, facilitate and advocate for them, and then build and harness support amongst the community to get it off the ground.

Relationships and Trust

As noted above, interviewees reported that water users and other stakeholders in the Rio Grande Basin have gotten to know and trust each other as a result of working together to defeat various schemes to export water from the valley. It wasn't always this way, and past contentious relationships and lack of trust sometimes stood (and sometimes still do stand) in the way of effective action. Important elements of building trust and productive relationships have included working together on mutually beneficial projects and thoughtful framing of issues to encourage productive discussions.

Historically, according to several interviewees, there was a lot more conflict and contention around water management. A farmer who is well over 60 and a 4th generation farmer and rancher described how the culture of conflict over water is fed. He explains that "every ranch has a history of conflict over the priority system. It's in the blood. We know one another by their water rights."

A farmer and ditch manager also reported that the history of in-fighting and conflict were detrimental to addressing the "alleged" debt in the 1960s because,

> *They didn't take the time to understand the compact and didn't discipline themselves to live by it… You can trace back to hard feelings that started from non-compliance, the hammer coming down and trying to find someone besides yourself to blame. A lesson learned there is, when that compact comes in, don't screw around. Stay on top of it… but if you screw around and argue and fight, you can find yourself behind fast.*

It's taken a long time to heal that. We're over that now, but 1969 til now is 50 years. That's too high a price to pay for a community to progress, advance, and do good projects.

He then went on to describe how the Rio Grande Basin Roundtable has played an important role in building trust and relationships, which in turn has expanded people's ideas about what they can accomplish.

> *On the Rio Grande, we have what we call the STP principle. It's the "Same Ten People." So when you are the guy on the Conejos, and you're also on the Roundtable, and you're the lady on the San Luis Valley Water Conservancy, and you're also on the Roundtable, you start realizing these are good people and we can help projects go. And once we all started to help each other's projects, it's like there's no gravity. We can do anything we want.*

In addition to getting to know others with similar and different approaches and perspectives through repeated interaction, productive relationships have been built from allowing space for solutions to emerge. An interviewee who used to work in water management at the Basin level and is "not a big climate change person," talked about the importance of focusing on what would move the conversation forward towards addressing problems. In a couple of different ways, he described how it was less important to focus on whether Colorado's Rio Grande debt was legitimate or on whether climate change is human-caused than it was to focus on being prepared for the worst-case scenarios.

> *We better be prepared and we better put the best minds, thoughts, and ideas forward in preparation. If it doesn't happen, what have we lost? But if it does happen, if we get caught without having done some preparation, I think it's going to be ugly.*

By re-focusing conversations away from whether the "alleged" debt was legitimate or whether climate change is human-caused or cyclical, and towards how to be prepared, space was created for solutions to emerge and be discussed.

Carrots and Sticks

According to a farmer and water manager, watching other basins' experiences with having wells turned off, as well as the Rio Grande Basin's own experience with compact administration, provided a powerful incentive for water users in the Rio Grande Basin to develop their own program to achieve sustainable groundwater use, chasing the "carrot" of local control and avoid the "stick" of state action.

> *"We as a community watched the state with a heavy hand regulate groundwater withdrawals, particularly in the South Platte, and the draconian, and again, nothing against the state and what they did, they were doing exactly what they were prescribed to do, but the draconian efforts and the huge financial and cultural impacts from turning off several thousand wells in the South Platte.*

Although the groundwater subdistricts were a home-grown solution developed by learning from their own and other basins' experiences, achieving sustainable levels in Subdistrict #1 has remained elusive. Carrots and sticks that encourage water users to modify their water use have not be entirely effective. The locally-developed program in Subdistrict #1 of charging well-pumping fees that are then used to pay others to fallow land had some early success but was then overwhelmed by renewed drought that drastically cut surface water supplies and decreased aquifer recharge. This drove producers to rely more heavily on groundwater, and the fee imposed on pumping topped out and wasn't enough to disincentivize pumping as commodity prices were high, further diminishing the effectiveness of the program. As the other subdistricts develop their programs, they are trying to learn from this experience.

Conclusion

Rio Grande Basin water users were able to draw from their collective experiences with previous compact administration, resisting water exportation, existing organizational support, and leadership to work together proactively to develop their own solutions to water supply challenges. Whether their locally-developed system of incentives will be sufficient to achieve groundwater sustainability in the subdistricts facing depletion, however, remains to be seen. In spite of all of the community's shared experiences with curtailment and working together to develop locally-based solutions, successfully coordinating these efforts remains a major challenge.

Rio Grande Basin Timeline

- 1906: Rio Grande Treaty with Mexico; Elephant Butte Dam built in New Mexico.
- 1939: Rio Grande Compact ratified, with Colorado's delivery obligations based on runoff levels in the headwaters.
- 1950s – 60s: Colorado violates Rio Grande Compact due to increased surface water consumption and lack of compact administration.
- 1967: Lawsuit by Texas and New Mexico against Colorado for compact violations.
- 1968: Colorado committed to meet delivery requirements; compliance achieved by administering surface water rights and banning new wells.
- 1972: Closed Basin Project authorized.
- 1980s: Closed Basin Project finished.
- 1980s – 90s: Plentiful precipitation.
- 1985: Elephant Butte spills, erasing Colorado's water debt under the compact.
- 2002: Drought leads to renewed conversations about groundwater depletion.
- 2004: Senate Bill 2004 – 222 authorizes water users in the Rio Grande Basin to develop a self-regulating system to restore groundwater levels and replace and prevent injury to senior surface rights holders.
- 2006: Subdistrict #1, which overlays the Closed Basin, recognized as a legal entity to help restore the balance between water supply and use.
- 2012: First year of operation for Subdistrict #1.
- 2016-18: Subdistricts 2-6 formed as legal entities.