COLORADO
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The River of Returns – The South Platte

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It starts its descent as a trickle in the high meadows of South Park. It makes its way through the mountain valleys, over rocks, around trees, joining forces with other brooks and creeks, it presses on. It continues to roar downward, growing in stature until; at last, it reaches the vast prairie of the eastern plains. Here it seems to relax, no longer in a hurry but meandering here and there looking for a way to continue on its journey. The long, slow trek across the plain begins to take its toll, despite being joined by major tributaries such as the Clear Creek, Boulder Creek, Saint Vrain, Big Thompson, and the Cache La Poudre. The thirsty soil of the high plains and the baking of the summer sun diminishes the roaring mountain stream once again to a trickle and eventually it vanishes entirely into the sand. That's the mighty South Platte.

As I write this article on a hot summer day out in the high plains of Colorado, I'm reminded of the image of the South Platte River 150 years ago that I described above. To quote a line from James Michener's movie Centennial: "The Platte! That's the sorriest river in America. You've heard all the jokes about the Platte. Too thick to drink, too thin to plow. That's a nothing river." Or maybe you like this one better: "Good God! I couldn't help myself. The South Platte was the most miserable river in the West, a trickle in summer when its water was needed, a raging torrent in spring. It was muddy, often more island than river, and prior to the introduction of irrigation, it had never served a single useful purpose in its halting career." Yes, that my river and I'm proud of it!

While the South Platte has had a history of disappearing entirely in places as far west as Fort Morgan, prior to any development, this is no longer the case. The development of the South Platte began in the gold rush of 1859, miner's used the water to sluice the soil and find precious metals trying to make their fortune. While not all miners were successful, they were hungry – they needed to eat. So did all the people that had moved along the front range of the mountains. This need for food for both people and livestock grew and farmers responded. Ditches were dug and land was developed in the 1860s and 1870s in the fertile valleys where the mountains met the plains. The river provided a fairly steady flow in the spring and into the summer for farming near the mountains but did not provide a sufficient amount in the heat of the summer further east. However, as farmers began to use the river, divert it into their dirt ditches, and flood their fields, settlers downstream noticed something – their stretch of river lasted longer into the summer and was a more reliable source of water for

them. With the addition of storage reservoirs constructed and paid for by farmers in the early 1900s, the river began to flow even better.

When a farmer runs water into a leaking ditch, stores water in a reservoir, and floods his field, not all the water is used by his crop, some of the water percolates deep into the underground. This leakage creates an underground mound of water that eventually makes its way back to the river, adding to flows or making the river flow again, thus increasing the reliability for downstream users. In fact, Ralph Parshall, a civil engineer, hydrologist, and professor at Colorado Agricultural College (Colorado State University), in a 1922 South Platte study noted; "Return flows were increasing over time and continued to increase, mostly due to the general rise of the water-table over greater areas." He also reported the water-table had risen each year (since the early stages of irrigation development) as much as 100 feet in some areas. Dr. Parshall called this "The phenomenon of return waters." What some people call waste, we on the lower South Platte call our water right. In other words, one water user's waste is another water user's right. This is so prevalent on the South Platte that the water is used, an average of seven times from Denver to the state line. On any given day in the heat of the summer it is not unusual to have a flow of 200 to 300 cubic feet per second (cfs) at the Kersey gauge (a river gauging station just east of Greeley and a location after which all the major tributaries have merged with the South Platte) and 180 miles downstream have 50 cfs flowing into Nebraska, but have 1,500 to 2,000 cfs of diversion between Kersey and the state line. In addition, the river can be completely diverted (a dry up point) at several locations along the way, but just downstream it is flowing again. That is what return flows do for the South Platte.

These return flows from municipal use and irrigation coupled with storage and an additional 25% supply, over average native South Platte supplies from transbasin diversions, have allowed the once vanishing river to now flow year around. Not only does it flow year around, it also provides water for 70% of the State's population and the industries associated with this population. The South Platte boasts six of the top ten ag producing counties in its drainage through the irrigation of 831,000 acres. This river basin also has countless recreational opportunities, a wide variety of wildlife habitat naturally occurring in the mountains and that results from irrigated agriculture on the prairie. A thriving population, a vibrant agriculture, an incredible environment, a true river of returns and a place I am blessed to call home.

About the author: Jim Yahn is the manager of the North Sterling and Prewitt Reservoirs, a position that he has held for over 24 years. He is responsible for overseeing the diversion and distribution of water to over 350 farmers. Together the reservoirs are a source of irrigation water for approximately 70,000 acres. Jim is a registered professional engineer, receiving B.S. in Agricultural Engineering from Colorado State University. Prior to his employment with the North Sterling and Prewitt he worked as a private consulting engineer in Fort Collins for 5 years. He is a native of Colorado growing up on a family ranch, which used water from the North Sterling Reservoir System.