

Park County Stream and Wetlands Inventory Project and the Importance of the "Dry-up"

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South Park is a generally arid landscape. Except for a few playas, its aquatic resources are associated with the major stream systems that flow through the Park. It may be gold that brought most folks to South Park, but it was the water that allowed them to stay and settle. The stream systems in South Park are remnants of major rivers that once drained melting glaciers after the last ice. This means that our river valleys are wide, even though our streams are now, by comparison, quite small. Until recently, these wide valleys with their small streams were typically very wet. But now they are rapidly drying, and this is a direct result of recent land use and water practices. Our most important finding of the Park County Inventory Project to date has been a realization of just how fast the dry-up of South Park is occurring, and how much riparian and wetland habitat has been lost.

The history of the dry-up is a relatively simple one. If we could look back about 200 years, we would see the river valleys of South Park in a more or less natural state. They were by and large wide shrubby wetland complexes maintained by groundwater discharge and wildly branching stream channels maintained by beavers. Some of our streams still mostly look this way (Fig. 1), but most of our river corridors are much dryer, much more simplified versions (Fig. 2).



Figure 1: A reach of Tarryall Creek on the Collard Ranch where the natural stream and wetland riparian condition is more or less intact.



Figure 2: Another reach of Tarryall Creek where valley-wide shrub clearing and stream simplification is evident.

These are still beautiful meandering streams, but the habitat value is much diminished, and wetland area is shrunken to a mere fraction of its historical expanse. There are two major factors that caused this widespread wetland loss and the overall dry-up of South Park. When the Park was settled over the past 160 years, river bottoms were the most sought after land, and many of these areas were converted from "swampy" shrubland to pasture for livestock and hay production. Clearing out shrubs, removing beavers, and channelizing streams was part of the normal order of business to maintain an efficient working ranch in those days. Most of the river bottom lands in South Park were cleared and simplified in this way by the early 1900s, and as a result the streams have become generally simplified enlarged channels. A major focus of this study, so far, has been to document the historic extent of these river bottom riparian and wetland habitats, and to begin quantifying the degree to which they have been converted to dry pastureland.

Though simplified and in some ways degraded, wetland conditions were still present on most valley-bottom ranches through most of the 1900s. Groundwater discharge (springs) were not only welcome on the lands of 1900s ranchers, but springs were regularly enhanced or protected. And though riparian areas had largely been converted to pasture and hay meadow, these were typically kept wet via active and aggressive irrigation (Fig. 3). The transformation through the 1800s and most of the 1900s is basically one in which the "natural irrigation systems" of riparian areas (which relied on shrubs, branching streams, and beavers) were replaced by largely artificial irrigation systems that utilized diversions and ditches through mostly grassland pasture.

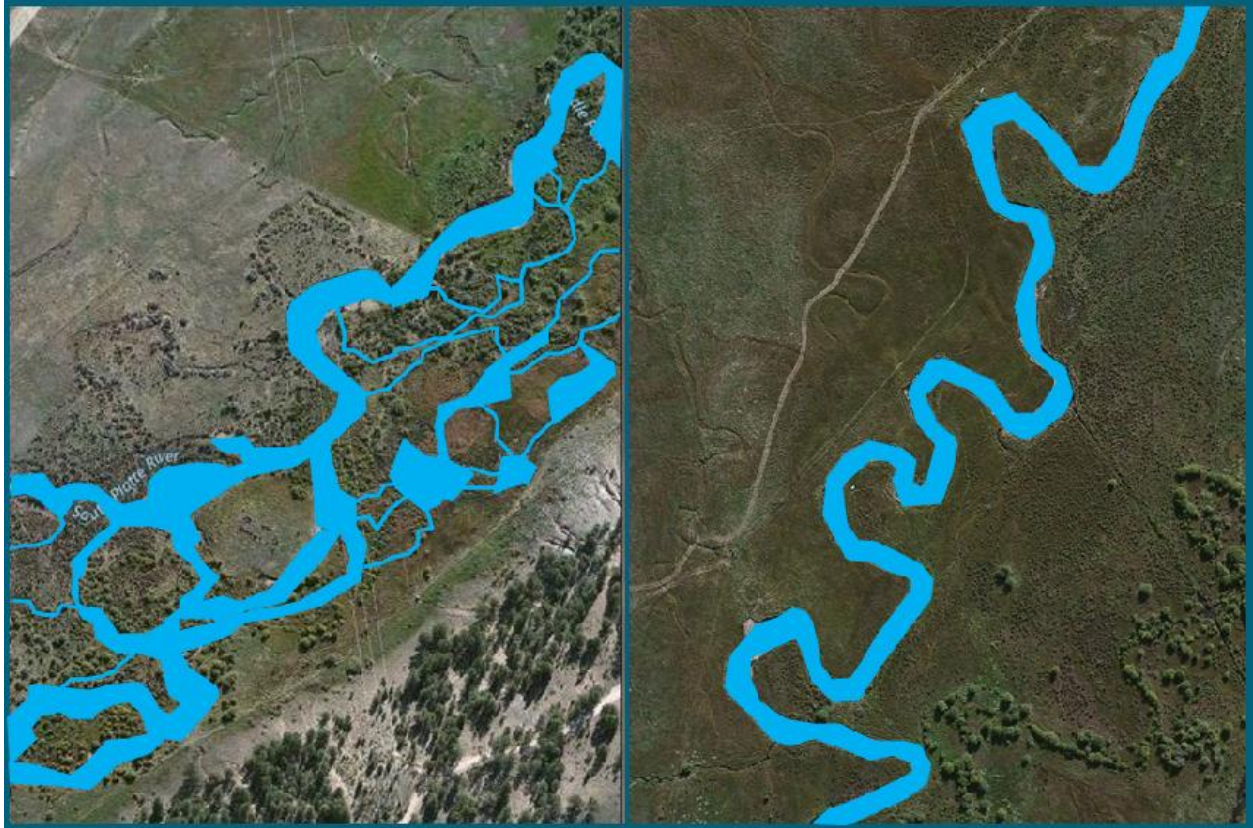


Figure 3: An example of the stream simplification that has happened on most South Park streams. The left photo is a reach of the Middle Fork on Tomahawk SWA where the shrub community is largely intact. Vegetation clearing and irrigation was limited to the left side of the valley, but the right side is mostly native shrubland. The stream (highlighted in blue) is complex, with many branches, side channels, and ponds maintained by beavers, and the surrounding area is wetland. Contrast that with the photo on the right which is the Middle Fork about one mile upstream. This section runs through an area that was totally cleared. The stream is much simpler, being a single large channel that effectively drains water and routes it from the surrounding landscape. Streamside wetland, in this case, depended on artificial irrigation which was curtailed in the late 1900s when water rights were sold.

The next major change began in the late 1900s when most of the water rights in South Park were sold off. Most of the irrigation water rights in South Park were sold to Front Range municipalities during this period, and by 1990, the amount of irrigated acreage in South Park had shrunken to a tiny fraction of what it had been in the 1950s (Fig. 4). The designated use of these water rights was also moved from South Park to areas downstream.

When water rights were held by irrigators, the owners had a compelling reason to keep water on the land. It was their livelihood. Now that these rights are held downstream, the incentive is exactly the opposite. Furthermore, when irrigation rights are transferred, water courts typically require a "dry-up," which means that the owners have to prove that the land that had previously been irrigated are now dry.

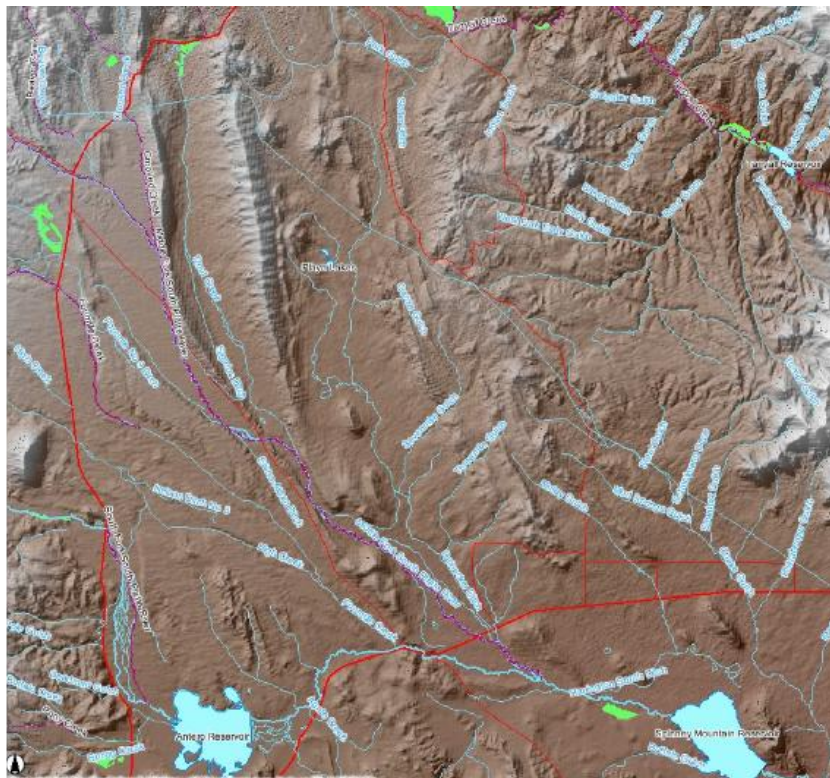
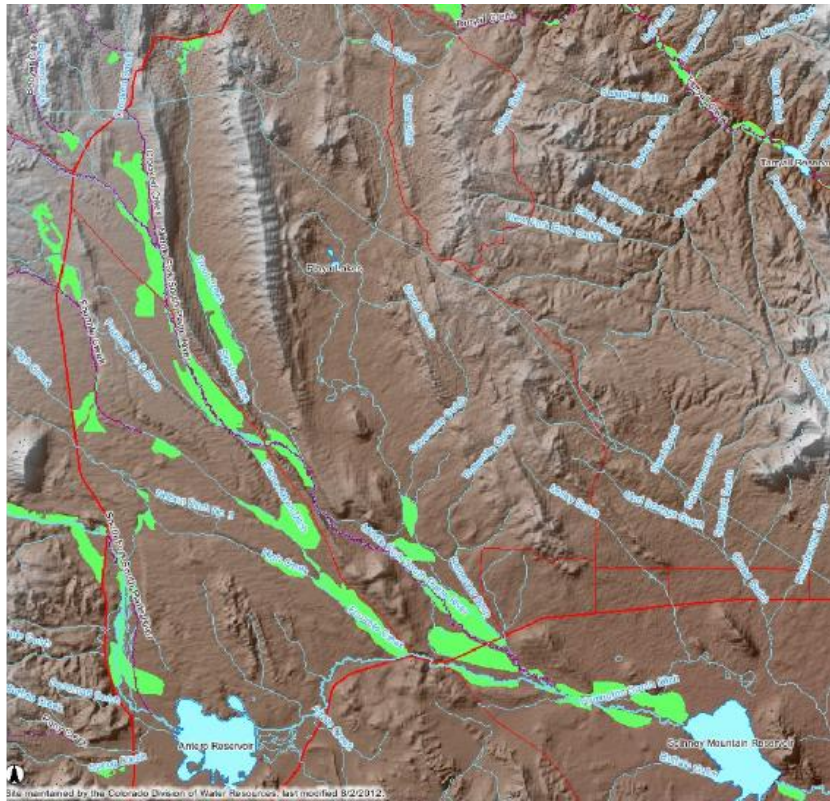


Figure 4: Map of irrigated lands (shown in green) in South Park. The upper photo shows lands actively irrigated in 1956. The lower photo shows the condition in 1989, after many water rights had been transferred.

It has become increasingly obvious through this study that a lot of these legal dry-ups may have originally been wetland in the first place. In some cases, people even went to great lengths to try to dry up wetlands in South Park for this purpose (Fig. 5-6).



Figure 5: The ditch line identified by the arrows was constructed around 1970 with the apparent purpose of draining riparian wetland area along Fourmile Creek near Hartsel.



Figure 6: On-site view of the ditch in Fig. 5. The ditch captures spring water and routes it off the site.

The dry-up of South Park is a major part of the natural history of the area, and an important shift in heritage resources. The precise amount of wetland loss attributed to this process (settlement and riparian vegetation clearing → irrigation → water right transfer) is not yet known, but it is clear that a major portion of South Park's historic wetlands have been lost or degraded as a result (Fig. 7).

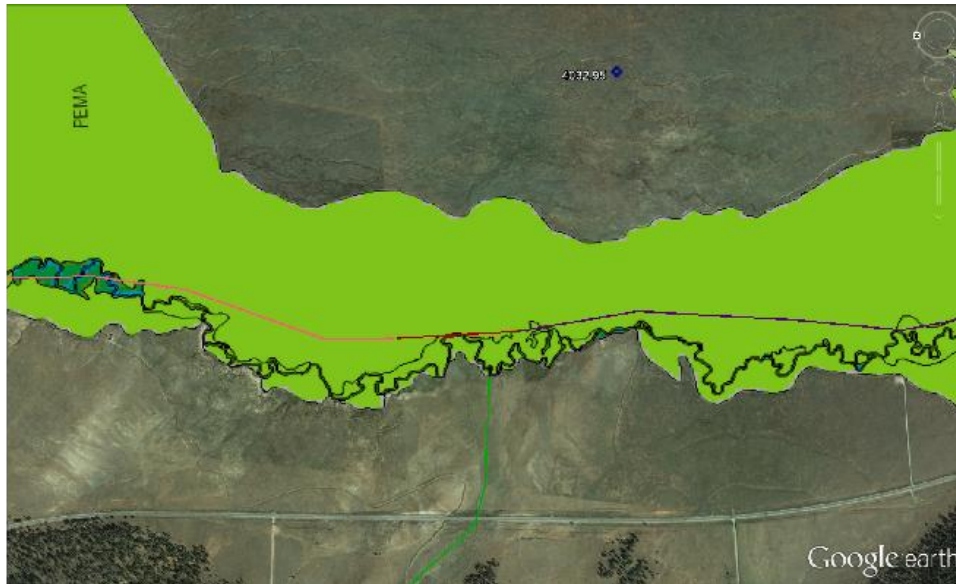


Figure 7: A reach of the South Fork upstream from the 63 Ranch. The upper photo shows wetland mapping that corresponds roughly with the extent of wetlands in the post settlement irrigation era. Pre-settlement wetland expanse was probably much wider. Present-day wetlands along the same reach are limited approximately to the area depicted in the lower photo.

Documenting the loss and degradation of aquatic resources is just one part of this project. The more important purpose is to identify areas where the process can be reversed. These areas represent opportunities for restoring historic wetland conditions and potentially "re-wetting" portions of South Park. We are not likely to get irrigation rights back, so restoring these riparian areas to the irrigated wet meadows that existed through the 1800s and 1900s is not practical. That is, we probably cannot restore the "artificial irrigation system" on these lands. But in many cases, restoring the "natural irrigation system" that existed prior to settlement may be very feasible. In fact, the systems often recover by themselves following simple treatment

and land use change. Once native shrubs are restored, beaver tend to move back in and drive the restoration process. Examples of natural and assisted recovery of wetlands by this process are common in South Park.

This project is aimed at finding areas where this and other types of restoration are possible and practical. Once these areas are established, then prioritization of future aquatic resource projects is largely an exercise in identifying lands where this type of use is acceptable, desirable, and compatible with existing and future land use. While native shrubby wetland riparian areas are not compatible with some uses such as hay production and real estate development, other uses such as livestock grazing and recreation may be totally fitting if managed appropriately.

In short, the history of South Park has led to the relatively recent loss of a large portion of its wetland habitat and aquatic resources. Our study seeks to document the extent of this loss and identify priority opportunities where these values can be restored.