

Human Use of the River and Bosque: 1540 to the 1800's

The first Europeans, led by Don Francisco Vasquez de Coronado, entered the middle valley in 1540. At that time, an estimated 25,000 acres (10,000 hectares) of land were being farmed. Cornfields intermingled with patches of cottonwood trees and 12 pueblos were established near present-day Albuquerque. Human influence on the Middle Rio Grande Valley increased considerably following the Spanish colonization, beginning in 1598. The Spanish introduced irrigation agriculture to the Pueblo Indians, which allowed the import of crops such as wheat and lettuce. During this period, more extensive riparian areas were cleared and water was diverted for agriculture, canals and acequias (irrigation ditches) were developed to bring water to the fields. By 1700, over 70,000 acres (28,000 ha) of land were being irrigated, and this increased to over 100,000 acres (40,000 ha) by 1800. By about 1850, valley communities were generally established in their present locations. The late 1800's was an influx of Anglo-Americans into the Rio Grande Basin, with increasing conversion of land to agriculture; a peak of about 125,000 acres (50,000 ha) irrigated for crops was reached in the middle valley in about 1880.

Human Use of the River and Bosque 1800's to Present



The rapid settlement of the Rio Grande Valley from the early 1800s to the present resulted in significant impacts on the aquatic and riparian ecosystems. Sediments eroded from adjacent upland areas as a result of overgrazing and deforestation were deposited in the river, causing riverbed aggradation (a rising riverbed relative to the surrounding floodplain). That, in turn, raised floodplain water table levels. The result was waterlogged soils of high salinity, which negatively affected cultivation; by 1926 only about 45,000 acres were being irrigated. Other human impacts during this period included the direct removal of native floodplain forests, hunting and trapping, grazing and pollution.

Water-management facilities were increasingly constructed along the Rio Grande in the late 1800s and early 1900s. Several water-supply dams and reservoirs had been built in the Colorado headwaters of the Rio Grande by 1913, and Elephant Butte Dam, at the lower end of the Middle Rio Grande Valley, was completed in 1916. In 1925, the Middle Rio Grande Conservancy District (MRGCD) was authorized by the New Mexico state legislature to alleviate concerns over the decrease in irrigated land resulting from water shortages, poor drainage, inadequate irrigation facilities and periodic flooding. The MRGCD was designated to provide the middle valley with a complete and efficient irrigation system as well as drainage and flood-control facilities.



This resulted in the construction of El Vado Dam on the Rio Chama, six diversion dams or headings in the middle valley, 345 miles (555 km) of drainage canals, 181 miles (290 km) of river levees, 250 miles (400 km) of main irrigation ditches, and rehabilitation of nearly 400 miles (640 km) of old irrigation ditches. Construction was completed in 1936. These changes greatly reduced the waterlogging of valley soils and improved the distribution of irrigation water, allowing the productive agricultural business present in the valley today. However, a flood that breached and overtopped the levees in 1941 led to the belief that more extensive flood control was needed. To reduce the danger of future flooding, four dams (Abiquiu, Jemez Canyon, Galisteo and Cochiti) were constructed. Cochiti Dam was the last of these completed (in 1975) and its operation directly affects water levels along the middle valley. In addition to flood control, these dams were mandated for sediment retention, wildlife enhancement and recreation. Other changes included clearing the floodway, straightening the river channel, installing jetty jacks to stabilize the channel and protect levees and enlarging and adding to the levees. In 2000, about 73,000 acres (29,200 ha) were being irrigated along the Middle Rio Grande Valley.

Human Use of the River and Bosque: Water Use

All municipal water systems along the middle valley currently use water from the underground aquifer for domestic and industrial uses, while river water is used for irrigation. Overall, in the U.S. and Mexico, about 80% of the water taken from the river is used for irrigation. Rates of ground water pumping by larger systems (primarily Albuquerque, and Rio Rancho) now exceed the river's capacity to re-charge the aquifer, so that the water table beneath Albuquerque has been greatly lowered. To accommodate its high demand for water, the City of Albuquerque plans to begin taking water for domestic uses directly from the Rio Grande by 2005. The City is legally entitled to a certain amount of river water from the San Juan-Chama Project. Completed in 1971, the project used diversion dams, conveyance channels and tunnels to transport water from the San Juan River Basin (part of the Colorado River Basin) to the Rio Grande Basin, where it is dumped into Heron Reservoir on the Rio Chama. The City is one of several entities that contracted with the US Department of Interior for this water, which is not subject to restrictions of the Rio Grande Compact. Currently, the water helps boost minimum flows in the Rio Grande. The impact that removing this water will have on the river and bosque ecosystems remains to be determined.