

Fact Sheet: Water Budget for Socorro-Sierra Region

Development of a water budget that integrates water supply and demand information is a key aspect of an overall regional water plan as prescribed by the New Mexico Interstate Stream Commission (NMISC) in the Regional Water Planning Handbook (NMISC, 1994).

A water budget for planning is designed to answer the question, "Are the available water supplies in the planning region sufficient to meet current and projected future water needs by the region's residents?" To do this, we needed to integrate information on groundwater and surface water supplies with our understanding of both historic and future water demands.

The following discussion of water budgets is organized according to the following five hydrologic divisions: Rio Grande Basin, San Agustin Basin, Alamosa Creek Basin, Jornada del Muerto and Tularosa Basin, and alluvial basins west of the Rio Grande in Sierra County.

Rio Grande Basin. The vast majority of population, economic activity, and appurtenant water use in the planning region is concentrated within the Rio Grande Basin. The water supply to the Rio Grande Basin is comprised of flows in the Rio Grande itself together with connected groundwater and tributary inflows. Demands from both human and natural processes deplete those supplies (see HRC, 2000). In addition, a major portion of the overall river inflows must be delivered to southern New Mexico, Texas, and Mexico as prescribed by the Rio Grande Compact treaty.

Figure 1, on the back side of this fact sheet, summarizes the average annual water budget for the Rio Grande Basin within the planning region. The Rio Grande inflows at the northern end of the region (shown as Rio Grande at Bernardo in Fig. 1) were obtained by subtracting Rio Grande Compact downstream delivery obligations from the average flows at Bernardo from streamflow records (SSPA, 2000).

This chart shows that in average years, the supplies barely exceed demands, indicating that our Rio Grande Basin water supplies are essentially totally allocated to existing uses.

It is important to note that this represents the average annual budget, and that there is actually a great deal of variability in the supply. For example, in drought years, demands likely exceed supplies, and we would end up mining our groundwater resources and not be able to make our downstream delivery obligations.

Finally worth pointing out is the fact that natural depletions (RPET, riparian evapotranspiration) and reservoir evaporation off of Elephant Butte reservoir lead to more than 75% of the total depletions in the Rio Grande basin portion of the Socorro-Sierra water planning region.

The Rio Grande Basin below Elephant Butte reservoir, which includes the T or C and Caballo communities has not yet been investigated as part of this planning effort.

San Agustin Basin. The San Agustin Basin has no perennial surface water supplies, and the groundwater basin stores on the order of 10 million acre-feet of potable groundwater. The basin receives approximately 7,500 acre-feet of groundwater recharge annually (DBS&A and HRC, 2001). The village of Magdalena pumps their potable water supply of less than 200 acre-feet annually from the eastern fringe of the basin, and there are a small number of rural private wells that annually pump less than 3 acre-feet each from the basin.

Alamosa Creek Basin. South of the San Agustin Basin, the Alamosa Creek basin is largely undeveloped save a few ranches that obtain their domestic and livestock supplies from the basin. The groundwater basin holds roughly 1 million acre-feet of potable water, and receives approximately 2,000 acre-feet of groundwater recharge annually (DBS&A and HRC, 2001). The aquifer discharges from springs near the Monticello Box on the southeast corner of the basin. Surface flows from Monticello Box are diverted and fully depleted by irrigators in the vicinity of the villages of Monticello and Placitas.

Jornada del Muerto and Tularosa Basins. Both these groundwater basins contain large volumes of stored groundwater. Most of the stored groundwater, however, is of marginal quality. Due to the sparse populations, the land status of the White Sands Missile Range, and the large distance from population centers in the planning region, the groundwater supplies in these basins are sufficient to meet current and likely future demands.

Sierra County Alluvial Basins. West of the Rio Grande in Sierra County, a number of small alluvial basins drain off the eastern slopes of the Black Range. Some of the basins have flowing streams (e.g., Las Animas Creek, Berenda Creek, Percha Creek, ...), although little water generally reaches the Rio Grande basin as the supplies tend to be depleted by upstream uses. Those upstream uses include irrigation supplied by both surface flows and groundwater pumping, and domestic uses supplied by wells that tap into the alluvial aquifers. These supplies are generally adequate to meet existing demands, but are not likely sufficient to accommodate large increases in use.

References

DBS&A and HRC (DB Stephens and Assoc. and Hydrosphere Res. Cons.), 2001, *Socorro-Sierra Planning Region Non-tributary Groundwater Supply Study.*

HRC (Hydrosphere Resource Cons.), 2000, *Historic and Current Water Demand in the Socorro-Sierra Water Planning Region.*

NMISC, 1994, *Regional Water Planning Handbook.*

SSPA (SS Papadopoulos and Assoc.), 2000, *Middle Rio Grande Water Supply Study.*

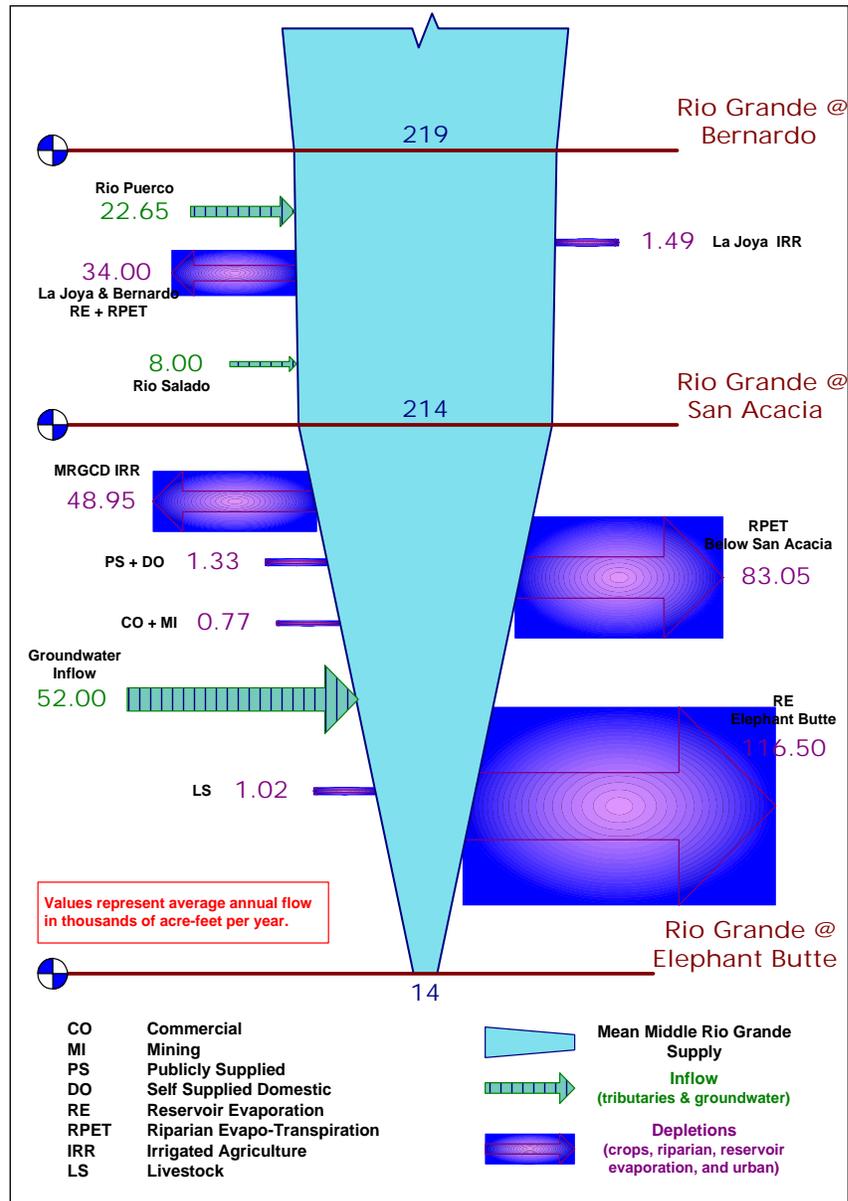


Figure 1. Rio Grande Basin average annual water budget in Socorro-Sierra planning region.



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