



Water-Delivery System

Problem Statement

Irrigation districts, the producers they supply, and municipalities in the region have only one source of water – diversions from the Rio Grande. A simultaneous increase in demand and a reduced supply of water in the Lower Rio Grande Valley are intensifying the need for efficient water management and allocation of limited supplies.

Because of Mexico's failure to comply with the 1944 Water Treaty, diversions have been reduced, impacting revenues for both irrigation districts and producers. In addition, New Mexico's failure to comply with interstate water compacts has often led to reduced flows in the Pecos River, which feeds into the Rio Grande.

The infrastructure for delivering water is aging; many components are close to 100 years old. At several locations, components of this infrastructure are deteriorating and in need of repair.



- Water losses from seepage, spills, and evaporation in Valley conveyance systems are currently estimated to total some 211,000 AF per year, and the loss rate is expected to increase as the system further ages.
- Because the conveyance and distribution system was originally designed for furrow irrigation, there are challenges in using modern water-saving irrigation technologies (e.g., drip, micro-jet, sprinkler irrigation) that require lower volumes but more frequent applications.
- Need for agricultural water is seasonal, with many users making simultaneous demands. Such demand reduces head pressure within the system and increases on-farm percolation losses. On the other hand, during the off-season, some canal water levels must be maintained to prevent cracking, thus increasing in-system losses.
- Funding for improvements in water conveyance and distribution systems has been inconsistent: \$55 million was authorized by federal legislation for construction and studies, \$6 million appropriated through the Bureau of Reclamation, and \$23 million approved in NADB grants. More funding is needed to fully restore the Valley's infrastructure needs. Districts are non-profit organizations and must comply with restrictions requiring them to operate at cost. As a result, they have limited or no funds to invest in improving infrastructure. "Push water" is required to make deliveries to both agriculture and municipal users, especially those at isolated locations. If a sufficient volume of push water is not available, it may be difficult to serve all the agricultural and municipal needs within and across irrigation districts. Urbanization in many areas of the Valley and a lack of county zoning fragments irrigation districts, thereby exacerbating the normal issues

of daily district operations. Furthermore, unanticipated shifts in urbanization can negate the economic and water-conservation benefits anticipated from infrastructure investments, thus complicating long-term planning.

Facts

- More than 91% of the water consumed in the region is supplied by the Rio Grande through releases from Falcon and Amistad Reservoirs; currently, those releases total about 1.2 million acre feet (AF) per year.
- Local irrigation districts (IDs) deliver water to nearly every municipal, industrial, and agricultural user in the LRGV.
- To facilitate delivery, IDs own and operate a vast infrastructure system consisting of 24 pumping stations on the river, 800 miles of main canals, 700 miles of laterals, 1,700 miles of pipelines, and several in-district reservoirs/resacas.

Potential Solutions

- Increase funding for rehabilitating infrastructure to reduce system losses. According to the long-range water plan for the region, more than \$200 million is needed to achieve potential water savings.
- Increase the use of on-farm water measurement and price incentive programs.
- Install pipelines to carry water to municipalities, thus reducing requirements for push water.
- Force Mexico to comply with the 1944 Water Treaty.
- Encourage New Mexico to comply with Pecos River treaty obligations.
- Investigate ways to enhance revenues (e.g., through rate changes) to provide investment funds.
- Import and/or develop water from sources other than the Rio Grande.
 - Reuse treated wastewater for crop irrigation as well as municipal and industrial purposes.

- Expand use of desalinated water for municipal supplies.
- Encourage coordination among districts.
 - Establish a shared investment fund for constructing needed improvements to system infrastructure.
 - Construct inter-district interconnects to facilitate water sales/leases between users and for operational benefits.
- Create partnerships with municipalities.
 - Municipal funding for infrastructure rehabilitation could help stabilize water costs for the future.
 - Involve districts in long-term planning for municipal needs.
- Adopt technology (e.g., GIS mapping) to facilitate a *systems* approach to ID operations.
- Quantify the costs, benefits, and water savings associated with rehabilitating water systems at specific sites throughout the Lower Rio Grande Valley and present this information to decision-makers and funding agencies. Studies of this sort are now being conducted by Texas A&M.

Barriers to Solutions

- Difficulty in obtaining substantial federal appropriations from Washington, D.C.
- Competition among water-related projects for limited state and local funds.
- Timeliness in identifying a need and then obtaining appropriations and flow of funds.
- Reluctance to raise water rates due to political concerns. Legal constraints linking municipal and agriculture rates combine to limit districts' ability to generate investment funds.
- Differing viewpoints/positions of various stakeholders make consensus difficult.
- Absence of incentives to conserve water.
 - Municipalities have priority and can tap into agriculture water to meet needs.
 - Unless rates are linked to the volume of water consumed, agriculture users will not receive any benefit or compensation from saving water.