

Improving Irrigation System Performance In The Middle Rio Grande Through Scheduled Water Delivery

Nathi Manana, Kristoph-Dietrich Kinzli, Ramchand Oad, Luis Garcia, David Patterson, and Nabil Shafike

Department of Civil and Environmental Engineering, Colorado State University

Abstract. Scheduled water delivery (SWD) provides the opportunity to increase overall irrigation system performance and define legitimate water use in regions without adjudication. A well-managed program of scheduled water delivery is able to fulfill seasonal crop water requirements in a timely manner, but requires less water than on-demand water delivery. In order to successfully realize SWD in an irrigation district, several components need to be addressed and developed simultaneously.

This paper will present results of on-going research in the Middle Rio Grande Conservancy District (MRGCD) related to implementation of scheduled water delivery supported by a decision-support system (DSS) and modernization of irrigation infrastructure. A DSS developed over the last four years uses linear programming to find an optimum water delivery schedule for all canal service areas in the MRGCD irrigation system. The DSS has been developed for the entire MRGCD and a significant validation effort of input parameters and model logic has been completed.

The second component for implementing scheduled water delivery is a program of irrigation infrastructure modernization with Supervisory Control and Data Acquisition (SCADA) system. Over the past six years, the MRGCD has modernized canal infrastructure and developed a SCADA system with the focus being to improve water use efficiency.

The third component in implementing scheduled water delivery is its acceptance by all water users as a matter of district policy and practice. To gain acceptance and disseminate information regarding SWD, a public outreach program was formulated that includes providing water users information through newsletters, websites, and public meetings. It also included training related MRGCD staff in the concepts and practice of scheduled water delivery and the use of related decision-support systems.