Development of RiverWare Model of the Rio Grande Flow for Flood Control and Water Operations Planning

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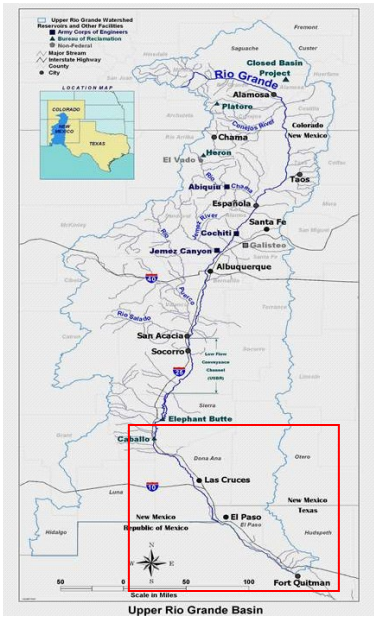
BACKGROUND

The U.S. Army Corps of Engineers in collaboration with the New Mexico Interstate Stream Commission, U.S. Bureau of Reclamation, U. S. Geological Survey, and U.S. Bureau of Indian Affairs, with cooperation from numerous other Federal, states, local and other agencies, have collaborated to develop the Upper Rio Grande Water Operations Model (URGWOM), using RiverWare® software. The model simulates the river flow and water operation in the Rio Grande basin from the Colorado–New Mexico state-line to just above Fort Quitman, Texas, 120 miles southeast of El Paso. A water quality component will also be included in future development of URGWOM that will be useful for making management decisions to maintain optimal river ecosystem health while meeting downstream water delivery requirements. TAMU, NMSU and the UACJ team are developing the RiverWare model to simulate the river flow for the reaches between the Elephant Butte reservoir and Fort Quitman.



Upper Rio Grande Basin and Study Area

METHODS

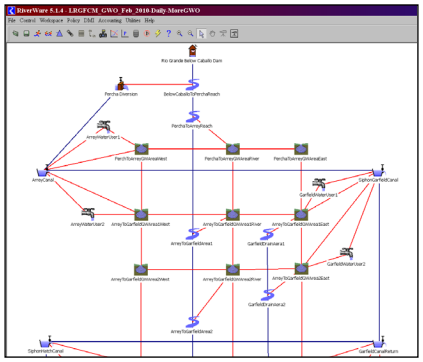


Illustration of RiverWare model node and flow configuration

- Collect and compile necessary data and analyses to expand the URGWOM RiverWare® model for water operations and flood control planning in the Rincon Valley and Mesilla Basin
- Collect and compile necessary data and analyses to expand the URGWOM RiverWare® model to simulate flows and water operations planning for the El Paso lower valley and District 009 in Mexico.
- Integrate the RiverWare model to simulate river flow and water operations scenarios for the entire study area (from Caballo Dam in New Mexico to Fort Quitman in TX) with enhancement in crop water consumption.
- Enhance coordinated water resources database by incorporating model input data and simulation data into the PDNWC database and GIS website.

PROGRAM RESULTS AND BENEFITS

- Workshops and trainings for water resources stakeholders are being held to demonstrate RiverWare modeling and use.
- Access to surface water flow and water quality data within the Rio Grande Project Watershed, and hydrologic simulations in this project will benefit regional stakeholders in many ways: better controlling flood surges with more responsive flood and water quality management and mitigation strategies; providing Federal Emergency Management Agency (FEMA) information in its disaster response plans and helping irrigation districts, water utilities, and federal water operators to more effectively and efficiently manage water deliveries.
- Three technical reports have been published: http://www.pdnwc.org.
- RiverWare models are available for flood control and water operations planning.

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