
AWRA 2011 ANNUAL WATER RESOURCES CONFERENCE
Albuquerque, New Mexico

November 7-10, 2011

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DEVELOPMENT OF DYNAMIC CHANNEL ROUTING MODEL OF THE LOWER RIO GRANDE

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ABSTRACT: This presentation deals with a dynamic channel routing study of the Lower Rio Grande to predict water surface elevation under the occurrence of the design floods including 100 frequency year flood of 250,000 cfs. The most recent hydraulic modeling of the Lower Rio Grande (LRGFCP, Lower Rio Grande Flood Control Project) conducted by the International Boundary Water Commission (IBWC) in 2003 routed the Lower Rio Grande from Peñitas to Brownsville. The study concluded that in general the LRGFCP does not provide adequate flood risk protection for the 100 frequency year flood at several locations such as the Rio Grande City. The study aims to develop a more current dynamic channel routing model than can better determine the capability of present condition of the LRGFCP levee systems to convey the design flow. The routing model in this study covers the Falcon International Reservoir and the Rio Grande estuary downstream of Brownsville. Therefore, gate operations of the Falcon Reservoir and their impact downstream of the river can be simulated with the routing model. In addition the two diversion dams of the Anzalduas and Retamal Dams and their operations are included in the model to further improve the predictions. Diversion flow rate is set at 105,000 cfs based on the main floodways in the United States and Mexico. The diverted flow in the United States floodway is distributed as 84,000 cfs to the North Floodway and 21,000 cfs to the Arroyo Colorado. The dynamic routing model will be calibrated with observed surface water data from IBWC and compared with the previous hydraulic model.

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