

Water Availability in the Mississippi Delta:  
Initial Assessment of Alternative Water-Supply Scenarios

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Oral Presentation

Keywords: Mississippi Delta, groundwater, modeling, monitoring, optimization

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In an effort to better understand the impacts of different water-management scenarios on water availability and to identify additional monitoring needs in the Mississippi Delta, the U.S. Geological Survey and the Mississippi Department of Environmental Quality are collaborating to update and enhance an existing regional groundwater-flow model. As a result of this collaboration, the model has been updated through 2013 with the most recent water-use data, precipitation and recharge data, and streamflow and water-level observation data. The updated model has been used to evaluate selected alternative water-supply scenarios in order to assess relative impacts to the alluvial aquifer and identify data needs for future groundwater management modeling. Alternative water-supply options assessed to date include: 1) irrigation efficiency; 2) tailwater recovery and on-farm storage; 3) weirs for surface-water augmentation; 4) inter/intra-basin transfers; and 5) groundwater transfer and injection. A relative comparison approach was used to calculate the simulated water-level response due to each scenario. Water-level response is the difference between water-levels simulated by the alternative-supply scenario and those simulated by a base case or “no action” scenario. Water-level response in the alluvial aquifer varied for each scenario based on the location and magnitude of the implemented alternative-supply option. These initial model results will serve as a starting place to develop and assess conjunctive water-management-optimization scenarios as well as improve and enhance current and future monitoring activities within the Delta.