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Coping with Severe Sustained Drought in the Southwestern United States

Re-examining a Series of Papers First Published in AWRA's October 1995 Issue of Water Resources Bulletin

Tree ring evidence showing that droughts of length and severity much greater than those observed in the region's historic record provided impetus for this study of the impacts of a severe sustained drought in the Colorado River Basin. With funding from federal and regional agencies channeled through the several state Water Resources Research Institutes, an interdisciplinary team from several southwestern universities and private research organizations was formed in the mid-1980s. The team consisted of specialists in hydrology, natural resources law and policy, sociology, environment and economics. The group worked for several years to the characterize and model the hydrologic, social, environmental and economic impacts of a 38 year period encompassing a drought similar to the most severe and long-lasting dry period identified in the tree ring record. The study team formulated and, using computer simulation and real time gaming experiments, assessed a series of potential policy responses. The basic policy evaluated was the existing "Law of the River" and the assessments extended to alternative institutional options, such as changes in river management procedures, changes in legal environment and short-term market-type exchanges.

During the past five years, precipitation has been unusually scarce in the Colorado River watershed, and as this is written in September 2004, Lake Powell and Lake Mead have been drawn down so that they contain only about half of capacity. If the climatic trend continues, power generation from Glen Canyon Dam on Lake Powell will be jeopardized and the upper basin states will face a "call on the river" requiring them to reduce their water uses so as to meet annual deliveries required by the Colorado River Compact.

While the study reproduced here could be extended with new research methods, new data, more geographic detail, and by assessing a wider scope of impacts, the policy proposals and their evaluations remain timely. Given the rekindled interest in the study today, the Severe Sustained Drought research team thanks Hydrosphere, Inc. of Boulder, Colorado for preparing the original document for online presentation and the American Water Resources Association for making the papers available to the broadest possible audience.

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