

ON THE GROUND

New Directions in Water Policy: WRDA 2007

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Since 1976, the U.S. Congress has authorized the construction of water resource projects by the Army Corps of Engineers through the periodic passage of water resource development acts, which also promulgate water resource policies and programs.

Last October, Congress sent the Water Resource Development Act of 2007 (WRDA 2007) to President Bush. It authorized more than 900 projects, studies, and programs. Citing the large number of projects and total cost of near \$23 billion, the President vetoed it. Congress overrode the veto and WRDA 2007 was enacted. It was hailed as a move to address significant infrastructure problems across the country and to reform some of the policies and procedures under which the Corps carries out its activities.

Objectives Expanded

For 25 years, the defined water resource development objective of the Corps and other water-related agencies had been national economic development (USWRC, 1983), with little recognition of environmental and social costs and benefits or regional economic development. WRDA 2007, in contrast, states that “all water resource projects should reflect national priorities, encourage economic

development and protect the environment,” with attention to minimizing adverse impacts and vulnerabilities in floodplains or flood-prone areas; and protecting and restoring the functions of natural systems.

Policy Changes

Principles and guidelines: WRDA 2007 requires the Secretary of the Army, within two years, to revise the principles and guidelines used to formulate, evaluate, and implement water resources projects by specifically considering: best available economic principles and analytical techniques; public safety; environmental justice issues and nonstructural approaches to water resources development and management; potential interactions of a project with other projects and programs within a region or watershed; and evaluation methods that ensure the projects are justified by public benefits.

Flood vulnerability: WRDA 2007 requires the President to submit a report to Congress describing the vulnerability of the United States to damage from flooding, including the risk to human life and property. The report must also compare risks faced by different regions of the country, assess how well existing programs address priorities for reducing flood risk and the extent that they might encourage development and economic activity in flood-prone areas, and recommend ways to reduce and respond to flood risks.

Economic and risk evaluations: The Secretary of the Army now must assess all project feasibility reports for cost-

effectiveness and compliance with federal, state, and local laws. The Secretary is further directed to adopt a risk analysis approach to project estimates. For flood damage reduction projects, the residual risk of flooding and the loss of human life and safety must be calculated, as well as upstream and downstream impacts of the project. WRDA 2007 also requires benefits and costs of structural and nonstructural alternatives to be evaluated equitably, an idea long promoted by the environmental and floodplain management communities.

Independent review: For projects deemed controversial or with a total estimated cost greater than \$45 million, or when requested by the governor of an affected state, WRDA 2007 requires review by an independent panel of experts to assess the adequacy and accountability of the economic, engineering, and environmental methods, models, and analyses used by the Chief of Engineers.

A Step Forward

Over the last seven years there has been considerable debate in Washington about how to improve the way water resource projects are developed and implemented. WRDA 2007 addresses many of these issues and requires numerous actions by the President, Secretary of the Army, and the Corps’ Chief of Engineers to meet the intentions of the legislation. Unfortunately, in many cases, these efforts require funding, and little funding has been appropriated so far.

While far from a perfect solution to a complex problem, WRDA 2007 represents a major step forward. The response by the federal government over the next 12 to 18 months will indicate how well these congressional policy changes and activities are brought into play.

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Reference.....

U.S. Water Resources Council (USWRC), 1983. *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*, GPO, Washington, D.C.

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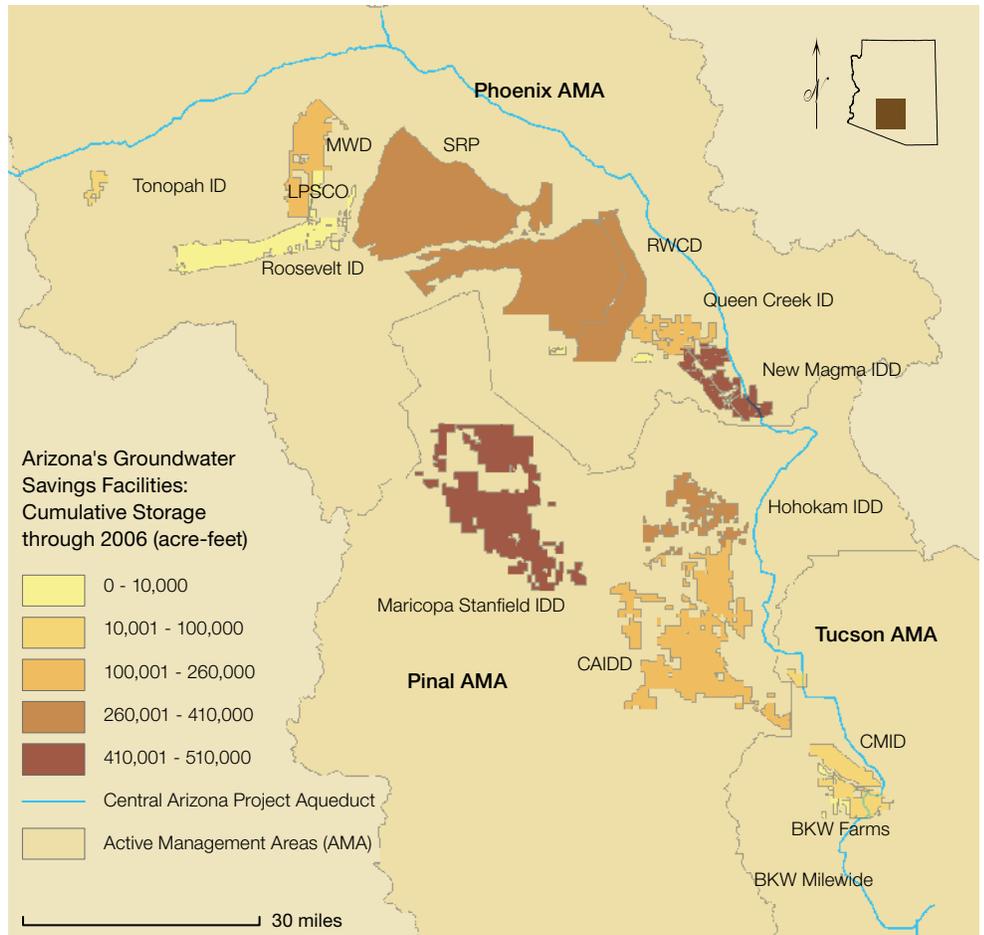
Arizona's Groundwater Savings Program

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One of the more interesting and sometimes debated elements of Arizona's Groundwater Storage and Recovery Program is the Groundwater Savings Program (GSP). The program was developed when Arizona was struggling to utilize its Central Arizona Project (CAP) water. Agricultural water users rejected the use of CAP water due to its high cost relative to groundwater. Yet, the higher the ratio of agricultural to municipal use, the lower were Arizona's CAP repayment obligations to the federal government, according to the formula used at the time. By the early 1990s, it was clear that both the municipal and agricultural sectors would benefit from a program designed to increase agricultural use of CAP water.

Partnerships Are Key

Sometimes called indirect recharge or in-lieu recharge, the GSP allows storing entities to accrue groundwater storage credits when surface water or effluent is used for agriculture in place



of groundwater. Since 1992, agricultural districts have partnered with entities such as municipalities, other water providers,

the Central Arizona Water Conservation District (CAWCD, the body responsible for delivering CAP water), and the Arizona Water Banking Authority (AWBA, the independent government authority authorized to store CAP water for times of drought). They are able to provide CAP water to farmers at a cheaper rate than what farmers would pay directly, and they gain storage credits when that water is used for agriculture. Through such arrangements, approximately 3.5 million acre feet of CAP water have been used instead of groundwater in groundwater savings facilities (GSFs) in the three central Arizona Active Management Areas (see figure above.)

Three different types of permits—facility, storage, and recovery—are involved in implementing this program, which is administered by the Arizona Department of Water Resources. The agricultural entity holds the facility permit. The storing entity holds the storage permit



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and accrues the credits that entitle the credit holder to recover the stored water. More than one entity can be a storage partner. Finally, recovery of the water must be accomplished through a well permitted for that purpose.

Benefits and Concerns

Storage at GSFs has the advantage of lower costs. The storing entity usually pays only a portion of the CAP water costs, with the agricultural user picking up the rest. In most cases, there is no facility charge associated with storing groundwater at the site. Contrast this with storage of CAP water at underground storage facilities (USFs), at which the storing entity pays the entire cost of the water to be stored in addition to a charge paid for use of the USF. Recovery considerations can be advantageous at GSFs as well. For an agricultural district, a GSF's area of hydrologic impact, where recovery well permits can be administratively easier to obtain, is the entire district.

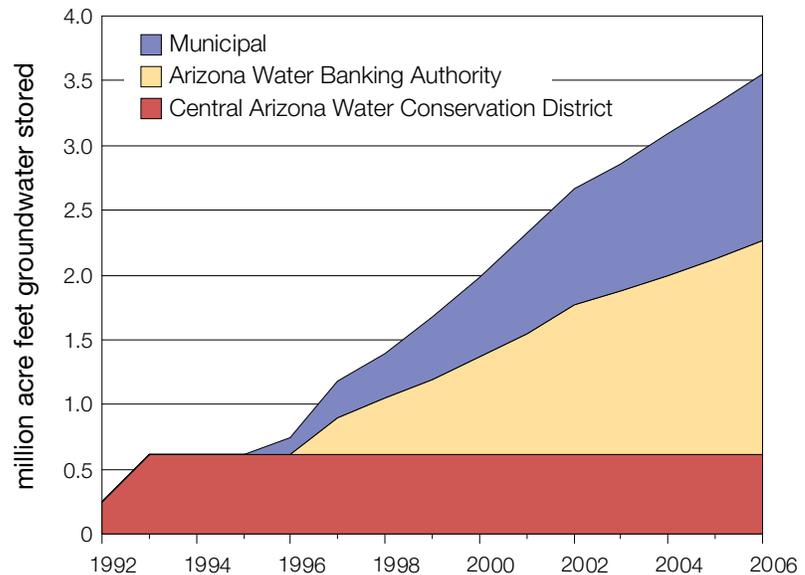
Concerns about GSFs have mainly centered on the perpetual groundwater use rights of agricultural water users in the Active Management Areas. Should affordable CAP water no longer be available, the agricultural entity has the right to return to groundwater use and benefit from the higher water levels resulting from not having pumped the groundwater while using CAP water. There are also questions about the water management implications of recovery outside the area of hydrologic impact, potentially resulting in recovery at significant distance from the storage. (This concern is not unique to the GSP.) The chart (above right) shows that much of the GSF storage has been on behalf of CAWCD and the AWBA, with planned recovery occurring in the future and perhaps outside the area of hydrologic impact. Because recovery plans have not yet been developed, the potential hydrological disconnect between storage and recovery is a concern.

What is unarguable about the GSP is that this voluntary water exchange

mechanism benefits the participating entities while furthering Arizona's water management objectives. Over 3.5 million acre-feet of CAP water has been used in lieu of pumping an equivalent amount of groundwater using this low-cost mechanism. The program enables municipal water providers to utilize CAP water indirectly and inexpensively to comply with regulatory requirements for use of renewable supplies. It is a low-

cost alternative for the AWBA. Farmers benefit from water costs below what they otherwise would incur, courtesy of their groundwater savings partners. The popularity of the groundwater savings program is based on the simple economic principle that voluntary transactions yield mutual gains.

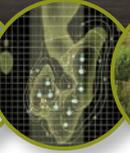
For more information, see Artificial Recharge, A Multi-Purpose Water Management Tool, Arroyo, Winter 2007 at ag.arizona.edu/azwater/arroyo/. Contact Sharon B. Megdal at smegdal@cals.arizona.edu.



Cumulative storage in Arizona's groundwater savings facilities, by type of storer.



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