

## MEMORANDUM

DATE: December 14, 2010  
TO: New Mexico Interstate Stream Commission  
FROM: Craig Roepke, ISC  
SUBJECT: Arizona Water Settlement Act Project Proposals – initial review of proposals submitted at Nov. 22, 2010 ISC meeting

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At the November 22, 2010 ISC meeting, various stakeholders from southwest New Mexico presented proposals for developing water and accessing funding available under the 2004 Arizona Water Settlement Act (AWSA). Following is an initial review of the stakeholder proposals in terms of the adopted ISC's 2004 policy for consideration of uses of the water and funding in the AWSA: 1) protect the Gila environment, 2) use the best available science, and 3) provide for present and future water uses. This review makes no comments on the merits or deficiencies of any specific proposal received to date.

### **Water Conservation**

A number of proposals would meet a water supply demand through water conservation. The conservation efforts proposed include public conservation, infrastructure improvements, agricultural improvements, and education. If structured properly, conservation efforts could conserve water and thus help meet a water supply demand. Conservation efforts do not increase the net available supply in a system or basin.

Public conservation efforts such as replacement of grass lawns and other high water use landscaping with low water use xeric landscaping can significantly conserve water. Replacement of toilets with lower flow models or installation of lower flow shower heads may reduce pumping, but because of effluent treatment and subsequent discharge, often into the same aquifer or stream from which the water is derived, net gains in water supply can be negligible.

Infrastructure improvements such as repairing leaking municipal delivery lines suffer from the same dynamic as low flow toilets. Pumping and treatment costs may be reduced, but in large part the leaking water can return to the aquifer or stream system, resulting in little water savings over time. Water harvesting only moves water supply to a different use and can have deleterious environmental effects when water that normally returns to a stream or aquifer is intercepted and turned to additional consumptive uses. Importantly, water supply for permitted uses can be negatively impacted.

Replacing high water use crops with lower water use crops can significantly reduce water consumption and conserve the available water supply. As in improvements to municipal water distribution systems, improvements in irrigation efficiency can reduce energy, labor, and materials costs. However, as the ISC has experienced on the Pecos and as confirmed by independent studies, improved irrigation efficiency usually results in greater water consumption, thus reducing water supply. Controls, such as limiting the amount of crop yield, could protect against increased consumption. However, if crop yield is not increased it is unclear what water supply demand would be met or what agricultural benefit other than reduced labor and materials costs would accrue.

Improvements in irrigation efficiency, absent controls to protect against increased depletions, could negatively impact environmental water supply.

Other agriculture-related proposals, including improvements to diversions, distribution systems, ditch lining, piping, and similar agricultural infrastructure improvements, could increase water availability and crop yield, thus increasing water use and decreasing overall basin or system supply. Reductions in conveyance losses where losses do not accrue to the system, or are otherwise depleted, could increase water supply and help meet a water supply demand. Metering and diversion control improvements can reduce waste and overuse, thus increasing available system or basin water resources to meet water supply demands. Piping or lining ditches can reduce infiltration and return flow, impairing riparian vegetation and ecologic functions.

### **Infrastructure**

Some projects feature deepening or increasing the number of municipal wells or deepening wells to access deep aquifers. Such projects could access additional water and help meet a water supply demand. Projects to develop the AWSA water to meet demands in Silver City, Columbus, or Deming could increase the legally available supply and help meet a water supply demand.

Projects to construct main stem reservoirs to capture AWSA water could increase the available supply and meet a number of water supply demands. Reservoirs, especially on-stream, can provide flood protection as well. Off-stream reservoirs can meet the same water supply demands as on-stream reservoirs, though flood protection capability is lessened. Properly constructed and permitted, off-stream reservoirs can also provide a water supply to augment stream flow during drought and low flow periods, improving aquatic and riparian habitat, as well as other ecologic functions.

The draft proposals for dams and reservoirs do not address the technical and environmental feasibility and mitigation efforts required of such structures. Further, for any infrastructure project, the state, local users and perhaps the federal government would need to demonstrate the ability to meet financial commitments of construction and operation and maintenance.

Projects for funding effluent reuse systems and septic system improvements may reduce local pumping and possibly treatment costs and would need to demonstrate the effort meets a water supply demand.

### **Transfer, exchange, or purchase of water rights**

Some proposals suggest transferring AWSA water to domestic wells – an activity that because of well effects and highly variable stream flow would not be permitted under current AWSA constraints. Outside water use could be provided, however, by exchanging valid irrigation water rights for contracted AWSA water. For instance, a domestic well owner buys an acre-foot of valid rights from an irrigator that he can then put to outside use. The irrigator uses the purchase price to contract for a replacement AWSA contractual right that keeps his irrigation water right whole or even increased. Similar mechanisms or outright purchases might be able to provide water rights for stock tanks on federal lands that do not have valid state water rights. The exact mechanisms required to move state water rights to stock tanks on federal lands are not clear at this time.

Buying and retiring agricultural water rights (as the State has done on the Pecos) could reduce depletions and make water available for other demands. The draft proposals

do not demonstrate how this activity would increase the basin water supply or meet water supply demands. If the retired water rights can be dedicated to in-stream environmental needs, aquatic habitat may be improved and the State may be better able to meet environmental demands.

Simple purchase of New Mexico water rights does not increase the supply available to New Mexico, unless it involves an exchange for or contract for additional AWSA water (e.g., as in exchange of irrigation water rights for AWSA water to provide outside use for domestic wells). Exchange of AWSA water for out-of-state use for existing New Mexico water rights would do nothing to increase available supplies in New Mexico.

### **Watershed improvement and/or restoration**

Many project proposals focus on watershed improvements, and such improvements have numerous demonstrated benefits, including improved forest health, maintained or improved critical habitat for endangered or threatened species, and preventing catastrophic wildfire. Depending on location, climate, topography, and other features, upland restoration (foothills to mountain slopes) may or may not increase water yields, and thus provide water to meet irrigation and in-stream environmental demands.

Projects that increase riparian vegetation and wetlands have not shown how the projects increase water supply or provide water to meet non-riparian demands. Importantly, such projects may be considered as mitigation efforts for a project/s that develops AWSA water. Structured and located riparian improvements or features may also provide a natural barrier against flood damage while improving floodplain ecologic functions.

To further guide and direct watershed improvements, the ISC approved a work plan that features an independent group of scientists, representing all major interests in the Gila Basin. That group will craft a scope of work for a comprehensive watershed restoration project. Such a project could identify an array of locations and improvement/restoration treatments in the Basin. Evaluation of the project could provide a baseline of results and guide future watershed strategies and treatments that could optimize water yield to meet a number of water supply needs.