

Option Submittal Form

Contact Information (optional):

Keep my contact information private

Contact Name: _____	Title: _____
Affiliation: _____	
Address: _____	
Telephone: _____	E-mail Address: _____

Date Option Submitted: February 1, 2012

Option Name:

Groundwater Banking Credits

Description of Option:

Developing water "banks" whereby an entity could "bank" or divert water to groundwater storage projects when there is a surplus or reduced need. When there is a critical or increased need, the entity could then "withdraw" an amount of equivalent water from the Colorado River that it previously banked. Where space is available in aquifers, storing water underground can be a cost-effective way to save water for dry years.

In addition, the possibility and potential for banking recycled wastewater is significant. This could be a great strategy to increase awareness and feasibility of recycled water recharge.

Some examples of groups already participating in groundwater banking:
<http://www.azwaterbank.gov/>
<http://www.semitropic.com/index.htm>

Location: Describe location(s) where option could be implemented and other areas that the option would affect, if applicable. Attach a map, if applicable.

Where there are good quality groundwater storage aquifers

Quantity and Timing: Roughly quantify the range of the potential amount of water that the option could provide over the next 50 years and in what timeframe that amount could be available. If option could be implemented in phases, include quantity estimates associated with each phase. If known, specify any important seasonal (e.g., more water could be available in winter) and/or frequency (e.g., more water could likely be available during above-average hydrologic years) considerations. If known, describe any key assumptions made in order to quantify the potential amount.

This would have to be an up and down process timing-wise and it would require that there is a surplus of source water. Depending on the banking aquifer size it could increase reliability significantly.

Additional Information

Technical Feasibility: Describe the maturity and feasibility of the concept/technology being proposed, and what research and/or technological development might first be needed.

This would require significant cooperation between water entities. It could prove easily feasible if there was enough interest and groups willing to initiate agreements. Some consideration would need to be given to losses in the systems

Costs: Provide cost and funding information, if available, including capital, operations, maintenance, repair, replacement, and any other costs and sources of funds (e.g., public, private, or both public and private). Identify what is and is not included in the provided cost numbers and provide references used for cost justification. Methodologies for calculating unit costs (e.g., \$/acre-foot or \$/million gallons) vary widely; therefore, do not provide unit costs without also providing the assumed capital and annual costs for the option, and the methodology used to calculate unit costs.

Costs would have to be shared amongst participating groups and could be considerable. The costs could vary widely depending upon scope and size of project.

Permitting: List the permits and/or approvals required and status of any permits and/or approvals received.

There wouldn't be a lot of consideration for permitting since it is basically a transferring of water rights between groups. However, the potential for recycled water recharge would create some permitting issues related to environmental and public health

Legal / Public Policy Considerations: Describe legal/public policy considerations associated with the option. Describe any agreements necessary for implementation and any potential water rights issues, if known.

Groundwater is largely unregulated in most places and the potential for legal implications are high. Cooperative frameworks would need to be drafted up by participating agencies and entities which would require a buy-in from the general public being served by these agencies. The Kern Water Bank in California has had its share of controversy in the past.

Implementation Risk/Uncertainty

Concerns about mismanagement and negative impacts to the environment are possibilities

Implementation Risk / Uncertainty: Describe any aspects of the option that involves risk or uncertainty related to implementing the option.

Concerns about mismanagement and negative impacts to the environment are possibilities

Reliability: Describe the anticipated reliability of the option and any known risks to supply or demand, such as: drought risk, water contamination risk, risk of infrastructure failure, etc.

Highly Reliable

Water Quality: Identify key water quality implications (salinity and other constituents) associated with the option in all of the locations the option may affect.

This could actually improve water quality both in the Colorado and groundwater basins. By leaving water in Colorado in critical times and adding water to groundwater basins.

Energy Needs: Describe, and quantify if known, the energy needs associated with the option. Include any energy required to obtain, treat, and deliver the water to the defined location at the defined quality.

Energy Required	Source(s) of Energy
Aquifers	Pumping water in and out of groundwater aquifers would be energy intensive +

Hydroelectric Energy Generation: Describe, and quantify if known, any anticipated increases or decreases in hydroelectric energy generation as a result of the option.

Location of Generation	Impact to Generation
None	NA

Recreation: Describe any anticipated positive or negative effects on recreation.

Locations	Anticipate Benefits or Impacts
NA	NA

Environment: Describe any anticipated positive or negative effects on ecosystems within or outside of the Colorado River Basin.

Locations	Anticipated Benefits or Impacts
Considerable potential for improvements or negative impacts to the environment +	NA

Socioeconomics: Describe anticipated positive or negative socioeconomic (social and economic factors) effects.

Would provide reliable sources of water for entities and the ability of water rights owners to sell water in surplus times.

Other Information: Provide other information as appropriate, including potential secondary benefits or considerations. Attach supporting documentation or references, if applicable.

NA