

SUBMIT OPTION SUBMITTAL FORM BY:

1. EMAIL TO: COLORADORIVERBASINSTUDY@USBR.GOV

2. U.S. MAIL TO: BUREAU OF RECLAMATION, ATTENTION MS. PAM ADAMS, LC-2721, P.O. BOX 61470, BOULDER CITY, NV 89006-1470

3. FACSIMILE TO: 702-293-8418

Option Submittal Form

Contact Information (optional):

Keep my contact information private.

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

Date Option Submitted: _____

Option Name:

Southern California Groundwater Desalination

Description of Option:

The 2008 Augmentation Report cited a 1991 Boyle report indicating that there was about 15 million acre-feet of brackish groundwater in the Southern California region at that time. Both the 2008 and 1991 reports indicated that not all of that water is available for groundwater mining, partially because previous overdrafting has been part of the cause of the degradation in water quality in some regions. A rough estimate from the 1991 report of the sustainable yield of brackish groundwater within the MWD service area was 200,000 AFY. Since 1991 numerous groundwater recovery programs have been implemented in the MWD service area and the MWD Integrated Resources Plan shows approximately 150,000 AFY of potential future projects.

Based on the above and discussions with the Local Resources Program staff at MWD, a general conclusion (related to CRBS options) is that there is probably some amount of brackish groundwater that could sustainably be pumped and treated (above what is already planned), but it is not readily apparent without more detailed investigation and the large amounts of easy to capture water are already included in existing plans.

For the high level CRBS option development, it is assumed that a 20,000 AFY project could be developed in the Riverside County Region (above current plans).

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

Riverside County.

SUBMIT OPTION SUBMITTAL FORM BY:

1. EMAIL TO: COLORADORIVERBASINSTUDY@USBR.GOV

2. U.S. MAIL TO: BUREAU OF RECLAMATION, ATTENTION MS. PAM ADAMS, LC-2721, P.O. BOX 61470, BOULDER CITY, NV 89006-1470

3. FACSIMILE TO: 702-293-8418

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.

20,000 AFY of new projects above current plans may be possible. Two primary constraints are sustainable yield and capacity limitations in regional brine disposal pipelines. These constraints can be better defined in the future with groundwater modeling and analysis of remaining capacity in the brine disposal pipelines.

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.

Brackish groundwater desalination is regularly done in Southern California. Key technical items to address include confirming sustainable yield, pre-treatment before RO, integration with local systems, and disposal of brine. Producing water at an acceptable price point is also a potential technical feasibility hurdle.

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.

The technical memorandum on brackish groundwater recovery prepared for the earlier augmentation study for the Colorado River system estimated costs at \$900 to \$1700 per acre foot in 2007 dollars. Additional analysis can be completed to update these costs to current dollars.

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

Permitting for this type of project includes the typical permits for construction of a water project, but this type of project is regularly permitted and therefore permit acquisition is not expected to be a key constraint.

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.

Key considerations will include evaluation of potential impacts of new groundwater pumping on existing groundwater wells.

SUBMIT OPTION SUBMITTAL FORM BY:

1. EMAIL TO: COLORADORIVERBASINSTUDY@USBR.GOV

2. U.S. MAIL TO: BUREAU OF RECLAMATION, ATTENTION MS. PAM ADAMS, LC-2721, P.O. BOX 61470, BOULDER CITY, NV 89006-1470

3. FACSIMILE TO: 702-293-8418

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

No major issues foreseen.

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.

The groundwater supply in Riverside County is anticipated to be highly reliable, but further study is required to confirm the sustainable yield.

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

The salinity concentrations in the region can vary between 700 mg/L and 2,000 mg/L. Although higher than the 500 mg/L drinking water target, this concentration is well within brackish desalination feasibility.

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
Energy for the RO process and pumping to the potable system is required.	The potential greenhouse gas effect is a concern. However, alternative energy strategies with lower or no greenhouse gas emissions are also possible.

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.	

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

Location(s)	Anticipate Benefits or Impacts
Colorado River	If these facilities result in additional water in the Colorado River due to less diversions by MWD, there could be positive impacts on recreation. However, it is likely that the water not diverted by MWD would be diverted by Arizona or Nevada and therefore no major positive or negative impacts on recreation are anticipated.

SUBMIT OPTION SUBMITTAL FORM BY:

1. EMAIL TO: COLORADORIVERBASINSTUDY@USBR.GOV

2. U.S. MAIL TO: BUREAU OF RECLAMATION, ATTENTION MS. PAM ADAMS, LC-2721, P.O. BOX 61470, BOULDER CITY, NV 89006-1470

3. FACSIMILE TO: 702-293-8418

SUBMIT OPTION SUBMITTAL FORM BY:

1. EMAIL TO: COLORADORIVERBASINSTUDY@USBR.GOV

2. U.S. MAIL TO: BUREAU OF RECLAMATION, ATTENTION MS. PAM ADAMS, LC-2721, P.O. BOX 61470, BOULDER CITY, NV 89006-1470

3. FACSIMILE TO: 702-293-8418

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

Location(s)	Anticipated Benefits or Impacts
S. Cal	Air quality could be impacted if the energy source is fossil fuels. However, utilities which serve the region have a mix of energy sources and at this time it is unclear whether the source of energy would impact air quality.

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

There would be new employment related to constructing and operating the facilities. Also, assisting in producing sufficient water to assist in maintaining a strong economy in the Southwest United States will have positive socioeconomic impacts.

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