

Option Submittal Form

Contact Information (optional):

Keep my contact information private

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

Date Option Submitted: 2/1/12

Option Name:

Single Reservoir Water Storage

Description of Option:

Assessment of relying exclusively on only one of the two existing major reservoirs in the Colorado River System -- Lake Powell or Lake Mead -- for water storage purposes. Retention of dams located at both reservoirs -- either in existing or modified forms -- for flood control purposes. The primary goal underlying this option is mitigation of current reservoir evaporation losses. The decision of which of the two major reservoirs to rely on for this option would hinge on (among other things) a comparison of evaporation and seepage loss rates at Lake Powell and Lake Mead.

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

Lake Powell and Lake Mead are the two viable reservoirs for this option. The ecosystem and communities surrounding the unused reservoir selected under this option would be affected by drainage of the reservoir. Communities currently reliant on the hydropower generated at the unused reservoir likewise would be affected -- although alternative energy sources foreseeably could be secured.

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.

The amount of water provided by this option would hinge on at least two factors for purposes of this calculation: (1) the scheduled developed for drainage of the unused reservoir and (2) the conserved evaporation losses for each year within the 50-year period based upon this schedule.

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 single-reservoir option has been examined by non-governmental organizations (Glen Canyon Institute). These existing studies likely would provide a useful reference point for assessing the conceptual and technological aspects of this option.

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.

TBD. Drainage of the unused reservoir itself likely would not impose significant costs. The more costly aspect of this option foreseeably would stem from any removal or modification of existing infrastructure at the reservoir -- e.g., modification (albeit retention) of existing dam, removal of adjacent hydropower facilities. Costs also likely would be incurred for environmental remediation of contaminated sediment and previously submerged areas (especially those areas likely to be used for recreation in the future).

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

Normal NEPA and ESA processes would be triggered by the different stages of this option noted above (and likely others).

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.

The legal and policy considerations are numerous. A major legal consideration would be the need to ensure that the single reservoir selected for water storage would be adequate to enable (1) the Upper Basin and Lower Basin to fulfill their respective delivery obligations under Articles III(c) and (d) of the Colorado River Compact and (2) the Bureau of Reclamation to fulfill its delivery obligations to BCPA section 5 contract holders in the Lower Basin. Among key policy considerations are (1) the need to secure alternative energy sources for communities currently reliant on hydropower generated at the unused reservoir and (2) the need to assess the fiscal impact of ceasing hydropower operations at the unused reservoir and potentially to secure alternative sources of funds to fulfill repayment obligations stemming from projects throughout the basin.

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

In addition to the concerns noted in the previous section, the scope of environmental remediation required for dealing with contaminated sediment and making recreation areas suitable for human use appear uncertain (costs and public health risks). I do not foresee infrastructure-related risks associated with using the single reservoir selected under this option to its full capacity -- assuming this capacity is deemed adequate to enable fulfillment of the delivery obligations (contractual and otherwise) identified above.

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.

Water quality risks may arise in conjunction with migration of contaminated sediment resulting from drainage of the unused reservoir. Also, as noted, the level of drought risk seems to hinge on assessment of the suitability of the single reservoir to enable fulfillment of existing delivery obligations.

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

Again, migration of contaminated sediment in the unused reservoir would be an issue. If the reduction in evaporation losses provided by this option translated into higher instream flows, then salinity levels foreseeably would be decreased due to greater dilution.

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
N/A	

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
Glen Canyon Dam or Hoover Dam	Decreased hydropower generation due to drained reservoir

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

Locations	Anticipate Benefits or Impacts
Glen Canyon NRA or Lake Mead NRA	Unused Reservoir: New forms of recreation supplant water-based ones
Same	Single Reservoir: Potential increase in water-based recreation

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

Locations	Anticipated Benefits or Impacts
Glen Canyon NRA or Lake Mead NRA	Restoration (partial) of adjacent native aquatic and riparian ecosystems

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

An array of social and economic impacts likely would be felt in communities located adjacent to the unused reservoir selected under this option (e.g., Page, AZ; Las Vegas metro). Recreation and tourism almost certainly would remain a key component of the economies and social fabric of these communities. There would be a transition in the types of recreation and tourism, however, and the resulting revenue stream from these sectors of the local economies is uncertain.

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

There likely would be scientific (archaeological/anthropological) value to Lake Powell being selected for draining under this option. This course of action would expose scientifically valuable sites previously submerged throughout Glen Canyon NRA.