
ATTACHMENT E

Surplus Criteria Proposal by Six States

This attachment is a December 4, 1998 document prepared by representatives of Arizona, Nevada, New Mexico, Colorado, Utah, and Wyoming presenting their joint recommendations on interim surplus criteria.

**Proposal for Interim Lake Mead Reservoir Operation Criteria Related to Surplus, Normal,
and Shortage Year Declarations**

**Prepared by Representatives of the States of Arizona, Colorado, Nevada, New Mexico,
Utah, and Wyoming in Response to the Draft California 4.4 Plan**

December 4, 1998

I. Introduction

The States of Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming ("Six States") are encouraged by the progress presently being made by the Colorado River water users within the State of California, who are endeavoring to formulate a defined, enforceable program to reduce California's dependence on Colorado River water over its basic entitlement. If implemented as envisioned, California's plan to gradually step-down from its current use of over 5.2 million acre-feet ("maf") of Colorado River water to its basic apportionment amount of 4.4 maf over a ten-to-fifteen year period will be a significant accomplishment.

The California 4.4 Plan, however, is greatly dependent upon using Colorado River water made available from surplus declarations on the Colorado River as a way to ease the State's transition to living within its basic apportionment. The other Colorado River Basin States have been, up to now, unwilling to enter into discussions on operating criteria that would accommodate California's plan. The reason for this reticence is obvious--new reservoir operating criteria on the Colorado River must only be an interim measure while California steps down its Colorado River water use. The temporary criteria cannot be viewed as a means to continue California's utilization of Colorado River water above its basic entitlement. Therefore, the Six States have insisted that California demonstrate a tangible commitment to reduce its water use before entertaining discussions of transitory reservoir operating criteria that might facilitate that reduction.

The Six States now believe that a reasonable draft plan has been formulated by California and sufficient commitment to the plan's implementation has been demonstrated by water users in California to allow the initiation of discussions on special interim reservoir operating criteria. The purpose of this paper is to describe the parameters of the interim criteria that would be acceptable

to the Six States. These parameters are consistent with and based upon the principles described in the paper issued by the Six States on October 20, 1998 titled Background and Principles for Negotiation – Special Interim Criteria for Releases of Water from Lake Mead During Implementation of the California 4.4 Plan.

II. Consistency with the Law of the River

It goes without saying that any interim operating criteria implemented to assist California in its program to eliminate its dependence on Colorado River water above its basic apportionment must be consistent with the Law of the River. Of particular importance in developing the interim criteria will be the apportionment system decreed by the United States Supreme Court under which water diverted into any of the three Lower Division States must fit within one of three categories:

1.) The water diverted is within that state's basic apportionment. Article II(B)(1) of the Decree, 374 U.S. 340 (1964).

2.) The water diverted is water that has been declared by the Secretary of the Interior as surplus water available above the 7.5 maf basic apportionment available to the Lower Division States. It must also be recognized that, of any amount declared to be available as surplus, only 50% of that amount is available to California, unless Arizona or Nevada choose not to divert and use the 46% and 4% of the surplus amount that is available to those states, respectively. Article II(B)(2).

3.) The water diverted is water that was available to one of the other Lower Division States in accordance with a) or b), above, but was unused by that state. Article II(B)(6).

III. Other Policy Considerations

In addition to the need for the interim reservoir operating criteria to be consistent with the existing Law of the River, the Six States assert that, as a matter of fairness to all Colorado River Basin States, the process of developing and promulgating interim criteria shall be consistent with the following principles:

1.) The federal government and California must affirmatively recognize that interim operating criteria are only temporary. The interim operating criteria will be in effect only during the transition period in which California reduces its dependence upon Colorado River water. Thus, the interim operating criteria must expire by their own terms no later than 2015. However, the interim criteria will also expire at an earlier date if it is established that California has achieved its goal of living within its basic 4.4 maf annual apportionment.

2.) California must commit to implementing its 4.4 Plan as quickly as possible. If, during the implementation phase of the Plan, it appears reasonable that the goal can be achieved more quickly than allowed for in the Plan, California must agree to take those steps reasonable to hasten achievement of the goal.

The Draft California 4.4 Plan proposed a two phased implementation process. The Six States accept the reasonableness of that approach, but disagree on the proposed time frame for implementation of the second phase. Rather than waiting for the completion of phase 1 core programs to begin phase 2, the Six States believe that phase 2 programs should be initiated by the year 2005. This policy is based on the desire for California to complete the entire reduction to 4.4 maf by the year 2015. This schedule provides six years for planning and environmental compliance, followed by ten years for implementation.

3.) For the reasons discussed above, the federal government and California must affirmatively recognize that there is a direct relationship between the continuation of the interim operating criteria and California's continued commitment and implementation of its plan to reduce its Colorado River water use to its legal entitlement of 4.4 maf/yr. At any point that there is demonstrated a diminishment or lack of commitment by California to achieve its goal as quickly as is practical, the interim operating criteria must be terminated.

4.) The interim criteria cannot be adopted without a parallel commitment among the Colorado River Basin States and the United States to determine how the River will be operated during periods of water shortage. The interim criteria providing surplus supplies will likely diminish the amount of Colorado River water in storage and thus increase the risk of water shortages on the river. While California will gain the greatest benefit under surplus criteria, it will place a greater risk of shortages on the other Lower Division States. Therefore, it is inherently

unfair to Arizona and Nevada to adopt interim criteria without developing in parallel an understanding of how shortages on the river will be managed. The existence of water shortage management criteria is essential if those states are to adequately analyze the increased risks they would face from the interim surplus criteria.

5.) The United States and the Colorado River Basin States must commit to ongoing studies and analysis to examine whether the interim surplus operating criteria are causing an increased risk of water shortages to Arizona and Nevada. In this process, all parties must reach a mutual understanding of how increased risk will be measured.

6.) California must agree to mitigate any increased risk of shortage to Arizona and Nevada. That mitigation might be accomplished through several techniques including a waiver by California of the shortage protection it is afforded by 43 U.S.C. § 1521(b) or, by California agreeing to store in Arizona through the excess capacity available to the Arizona Water Banking Authority, water that could be used to compensate Arizona and Nevada for any increased water shortages they suffer due to the interim operating criteria. Impacts of this interim criteria on the Upper Basin States would be minimized by measures such as the establishment of interim 602 (a) storage criteria or through other mutually agreed-upon measures.

7.) Interim operating criteria provisions that would provide extra municipal and industrial water for California during that state's reduction in water use transition period must be designed to provide only that amount of water that is needed by California M&I users after other sources currently available to the state have been used.

The Metropolitan Water District of Southern California ("MWD") holds California priority 4 and 5 rights under the Seven Party Agreement to a total of 1.212 maf. The Six States believe that if this volume of water can be provided, the California 4.4 Plan's goal of keeping MWD's Colorado River Aqueduct "essentially full" will be satisfied.

The Six States believe that the volume of surplus water to be made available to MWD must first take into account water unused by higher priority users within California. The Draft 4.4 Plan sets forth a schedule which phases down California's overall demand for water as conservation measures are being implemented. What the Draft 4.4 Plan does not indicate is the amount of unused water that may be available from more senior water uses (present perfected

rights and agricultural districts) which could keep the Colorado River Aqueduct full without requiring additional surplus deliveries. The Six States fully anticipate and expect that the water use of the more senior agricultural users will be carefully monitored by California and the Bureau of Reclamation and to the extent the irrigation districts do not use water within their contract entitlements, that water will be made available to MWD, thereby reducing the need for surplus releases from Lake Mead.

Likewise, to the extent that unused Arizona or Nevada basic apportionment can be made available to California users under the provisions of Article II(B)6 of the Decree, that water also must be counted against MWD's needs prior to determining the need for any surplus water derived under the interim criteria.

8.) To the extent that these interim criteria operate to provide extra water to municipal and industrial water users in Southern California, municipal and industrial water users in the other Lower Division States must be afforded the same opportunity, within the allocations defined by the Law of the River. For example, if the Secretary declares a surplus, it must be recognized that municipal and industrial water users in Nevada and Arizona would also be entitled to water above the states' basic apportionments to meet their needs.

9.) The Six States are well aware that the revised Draft 4.4 Plan calls for a considerable amount of groundwater banking within California at sites in the Cadiz Basin, Hayfield/Chuckwalla Basin, and Desert/Coachella Basin. These proposals will depend upon the availability of surplus Colorado River water. The Six States are concerned that under some circumstances these off stream banking proposals will lower reservoir levels to the point where the following year a "space building" type surplus will not be declared. The interim operating criteria proposed in the Draft 4.4 Plan insulates MWD from the effects of this condition by merely triggering a "Level 2 surplus" which still will keep the Colorado River Aqueduct full. The Six States believe that off stream banking of surplus water must be limited to only those years when a reservoir spill would otherwise be imminent.

IV. Proposed Lake Mead Reservoir Interim Operating Criteria

A. Introduction

The December 17, 1997, Draft of the California 4.4 Plan outlined a proposal for Lake Mead reservoir operations. The Six States agree with many of the concepts set forth in that proposal. However, there are several areas in which those concepts deviate from the principles discussed above and thus are in need of further definition, discussion and clarification. This section briefly identifies those areas and proposed additional concepts.

The Draft California 4.4 Plan describes three levels of surplus criteria. Level 1 is a spill avoidance strategy based on anticipated runoff. Level 2 is a strategy that attempts to keep the Colorado River Aqueduct full during the transition period during which agricultural conservation measures are being implemented within California. Level 3 is similar to Level 2, except that the surplus supplies are more limited, and California is required to use additional alternate supplies including dry year land fallowing and groundwater basin pumping options if it wishes to keep the Aqueduct full.

The Six State proposal envisions a set of interim criteria for reservoir operation in which the various levels are less distinct. The Six State proposal seeks to achieve a balance between the need to release water to build storage space to avoid future flood control regulation dictated releases and the need to carry over as much water in storage as possible to sustain future water deliveries through droughts. Similar to the California proposal, the Six States are willing to provide California with additional water for a specified period of time while conservation measures are being implemented. The States believe that when California is successful in implementing programs for conservation transfers to M&I uses it will be able to meet its future needs within its basic 4.4 maf annual entitlement and, therefore, there will be no need to continue the proposed form of interim reservoir operating criteria in the future.

Underlying all levels of the interim criteria is the commitment to attempt to meet the needs of southern California municipal and industrial water users which are causing the state to use more than its 4.4 maf basic apportionment. While this volume is expected to reduce continuously over time, it is still a significant amount of water, especially in the early years of the Plan's implementation. The Six State proposal also includes water for municipal uses in Southern

Nevada to meet Nevada's M&I needs above its basic apportionment of 0.3 maf after about the year 2005.

B. Tiered Surplus Strategy

The Six State proposal for Lake Mead operation, like the California 4.4 Plan proposal, envisions a tiered water management approach. In order to meet the objective of providing additional water to MWD and the Southern Nevada Water Authority ("SNWA"), Arizona must agree, under certain circumstances, to temporarily waive all or a portion of its legal entitlement to 46% of any surplus. The Six State tiered approach allows Lower Basin demands to be met incrementally based on designed surplus releases under certain reservoir conditions and anticipated runoff. The tiered approach steps are summarized as follows:

1.) Normal Year

During the period while the proposed interim criteria are in place, normal years will be declared only when available Lake Mead storage is at or below elevation 1125 (13.569 maf content). This represents about 3.8 maf of available storage capacity above the minimum power pool. This amount of storage will allow a minimum of five years of normal year deliveries through a drought cycle represented by the 33rd percentile lowest five year average of historic runoff. At the end of the five-year period, the reservoir elevation would be at 1083, which is the minimum power head (9.764 maf content). While this elevation is greater than the protection level proposed for declaration of shortages, the Six States feel that surplus declarations must be terminated 5 years before power production is impacted, rather than 5 years before the SNWA water intake structure is impacted.

In a normal year, California will be limited to 4.4 maf of consumptive use, and Nevada will be limited to 0.3 maf of consumptive use, unless unused apportionment is available from Arizona.

2.) Partial M&I Surplus

During the interim period, MWD and SNWA will be allowed to increase orders which would result in California's and Nevada's consumptive uses exceeding their basic apportionments. Under the partial surplus tier, the surplus volume would not be large enough to keep the Colorado River Aqueduct full nor to meet all of the potential needs of the SNWA. The volume of surplus

will be dependent on the water demands in the given year, reduced by the conservation opportunities the entities have to provide additional supplies in dry years. The dry year options are expected to include land fallowing opportunities, groundwater importation, and recovery of water that had been previously banked within California or possibly in the Arizona Water Bank. The combination of these programs may yield as much as 250,000 acre feet per year in California. SNWA would probably rely on recovery of water from the Arizona Water Bank as its dry year option and would be required to reduce its surplus demand above 300,000 af by one-half.

The partial M&I surplus tier will be implemented when Lake Mead storage is between elevation 1125 and elevation 1145 (15.585 maf). The volume of the partial M&I surplus will vary yearly and will decline over time as California proceeds toward its 4.4 maf legal entitlement. It will be equal to the volume needed to deliver 1.212 maf through the MWD Colorado River Aqueduct, considering the amount of core transfer programs already in place, less 250,000 af. When California has reduced its demand to 4.65 maf or lower, the extra water made available through the partial M&I surplus tier will be zero.

3.) Full M&I Surplus

During periods when Lake Mead content is above elevation 1145, but less than the amount which would initiate a surplus under the space building or flood control criteria described below, limited surpluses would be declared that would meet the goal of keeping the Colorado River Aqueduct full and meeting the needs of the SNWA. The volume of this surplus, as it relates to the Colorado River Aqueduct, would be the difference between the amount of water necessary to keep the aqueduct full (1.212 maf) and the amount that MWD already has available to it from sources within California's 4.4 maf basic apportionment. MWD's available supply includes its own priority 4 and 5 entitlements under the Seven Party Agreement, the amount conserved through core conservation programs that have been implemented, and any unused apportionment from more senior California contractors. The overall Lower Basin surplus, i.e. the amount of delivery above 7.5 maf, would also be reduced to the extent there is Arizona or Nevada unused basic apportionment. The volume of water available to SNWA would be that amount needed for M&I purposes within SNWA's service area above Nevada's basic apportionment of 0.3 maf. Current projections indicate that SNWA may not need additional surpluses until about the year

2005. Surpluses made available under the full M&I surplus tier would only be used for delivery to meet direct use needs in that calendar year and may not be used to refill carryover storage in off-mainstream reservoirs or for groundwater banking programs.

4.) **Additional Surpluses Based on Space Building to Contain Above-Average Runoff**

This tier refers to interim reservoir operating criteria that will allow additional surplus amounts to be made available to create reservoir storage space in anticipation of above normal runoff. A surplus strategy based on enhanced space building criteria was proposed by the Bureau of Reclamation based on studies performed following the 1983 flood events on the Colorado River. In January, 1986, the Bureau issued a special report titled Colorado River - Alternative Operating Strategies for Distributing Surplus Water and Avoiding Spills. This report suggested operating strategies for avoiding Lake Mead spills that went beyond the Corps of Engineers flood control criteria, but were, in essence, based on similar principles. Under these criteria, limited surpluses would be determined based on the need to provide adequate storage capacity for an assumed runoff rather than the actual yearly forecast. The Six States propose that the assumed runoff be the value of the 70th percentile of exceedance based on the historic record which is equivalent to about 17.331 maf runoff above Lake Powell. Technical studies have named this strategy "70R."

In recent years, the Bureau of Reclamation has investigated a number of surplus strategies including "spill avoidance," "flood control avoidance," and "shortage avoidance." All of these methods have positives and negatives associated with them. The Six States believe that the "70R" strategy is the best for use during this interim period because any surplus water provided is incremental to the previous tier of a full M&I surplus. In other words, the surplus strategy is not necessary to provide additional water for high value M&I uses since those needs will have already been met. The increment of use that could be available above M&I would likely be for additional groundwater banking and perhaps additional agricultural water in California, Arizona, or Mexico. The Six States do not believe it is prudent to apply surplus strategies that make additional water available based on statistical spill avoidance analysis which will present a higher risk, if the incremental water benefits are limited to groundwater banking and agricultural purposes. The Six State proposal will make water available for such purposes in years when the "70R" strategy

indicates that additional water should be released for beneficial use in lieu of potential release through the flood control criteria. If incremental surplus volumes are limited under this tier, priority must be given to groundwater banking for future M&I needs within California over agricultural uses. Agricultural uses in California should be limited to those years when the "70R" criteria results in large surplus volumes and there is a high degree of certainty that water would otherwise be subject to spill.

5.) Flood Control criteria

This tier refers to the current Corps of Engineers criteria for space building in Lake Mead that is necessary to avoid damaging levels of downstream flood releases. The flood control criteria is not, per se, a surplus strategy. Rather it is a strategy to use reservoir space to be able to reduce peak inflows so that outflow rates can be reduced to non-damaging levels. The surplus strategy relationship develops when the Corps criteria call for reservoir releases to be made at levels above downstream delivery requirements. Rather than let that volume be spilled to the Gulf of California, this tier of surpluses are designed to allow increased beneficial use in the Lower Division States and Mexico.

The Corps has defined specific volumes of storage space that must be left vacant during certain months of the year depending on forecast volumes to accommodate spring runoff or other unanticipated weather events. They have also mandated specific release rates by month to achieve these vacant storage spaces. In order to avoid the "dumping" of water in order to build storage space, provisions will be made which would allow the Lower Division States to schedule additional water for delivery. The volume of extra water available for delivery is equal to the amount that must be evacuated from storage, above regularly scheduled downstream demands, to meet the space requirements. Under some conditions, such as when the reservoirs are starting the year very full and when the forecast runoff is above average, the amount of flood control release could be several million acre feet. Under other circumstances, the space building formula may be such that only small volumes of water would need to be evacuated. However, since flood control related releases are generally associated with very full reservoir conditions, the Six State proposal would allow any and all beneficial uses to be met, including unlimited off stream groundwater banking and additional water for Mexico.

V. Shortage Determination Criteria

The Six States believe that considering current reservoir conditions and with prudent system management, the Secretary of the Interior should not have to declare a shortage condition for many years. Even with this recognition, the Six States believe that the establishment of shortage criteria that work in conjunction with the interim criteria is valuable for two primary reasons. First, the Arizona Water Bank has been created within Arizona primarily to store water underground over the next twenty years to mitigate the effects of future shortages to Arizona municipal water users. Shortage criteria are critical for Water Bank planning. The volumes of water that Arizona will withdraw as either basic apportionment or surplus apportionment over the next ten to twenty years is highly dependent on the need for water banking that will be used as shortage protection. Secondly, shortage criteria are needed to be able to identify any negative impacts created by the implementation of the temporary surplus criteria. All Six States, and especially Arizona and Nevada, want to be able to identify when the release of water to California from either the partial or full M&I surplus tiers, causes an increased risk of shortage. This analysis can only be performed if the shortage criteria are known.

The Bureau of Reclamation has been studying options for shortage criteria for a number of years. The framework for most of these strategies is to declare limited cutbacks well in advance of the point where those levels are critical. The most junior Lower Division water user, the Central Arizona Project, bears the burden of most of the delivery reduction. The timing of the reduction is based on the use of computer models to simulate reservoir operations. The model study focuses on the statistical probability of reservoir levels dropping below a critical "protect" level. The Six States endorse this framework and propose to adopt the protect level in Lake Mead of elevation 1050 (7.471 maf content) which is the elevation of the intake structure for the Southern Nevada Water Project. The Bureau of Reclamation has named this shortage strategy "80P1050." In accordance with the Bureau's studies, this level would not be guaranteed but the risk of drawing down to below that level would be limited to 20%. When the model studies indicate that the reservoir level is in jeopardy, a first tier shortage would be declared which would reduce Arizona's consumptive use by the CAP and other similar priority users to no more than 1,000,000 acre feet (about a 500,000 af reduction). Nevada would also share in shortages, but to

a much more limited extent. If reservoir conditions continue to deteriorate, additional cuts in use by CAP will be required.

VI. Overrun Accounting

The Draft California 4.4 Plan includes a provision that allows individual entitlement holders to exceed their yearly apportionment. The proposed overrun would be constrained by a maximum allowable accrual and would be subject to repayment in subsequent years. The overrun accounting provision is tied to the administration of agricultural entitlements.

The Six States are concerned with the overrun provisions. First, as the Colorado River enters into an era of limits, the States expect the Bureau of Reclamation to strictly enforce its contracts and the entitlements. In essence, within the Lower Basin, the Bureau must play the role of the State Engineer and enforce current limits on diversions by water users. Secondly, the Six States are leery of proposals that would allow significant diversions above the amount of water allowed to a state in shortage, normal, or limited surplus years according to the proposal described in this paper. It would be extremely inequitable to allow California agricultural districts to overrun their diversions by 10%, which is over 300,000 acre feet, while at the same time calling for the Central Arizona Project to reduce diversions by 500,000 acre feet because a shortage had been declared.

In spite of these significant concerns, the Six States do recognize that there may be limited occasions when inadvertent overruns will occur. Due to the fact that the annual entitlement of a junior priority district is dependent on the actual use by a senior priority user, there may be occasions when a district will order water only to find out later that it had exceeded its contract entitlement. This matter is further compounded in the Lower Basin because a state's apportionment is for consumptive use rather than diversions. Until the books are reconciled to calculate diversions less measured and unmeasured return flows, it may not be possible to know whether or not an overrun has occurred until the after-the-fact accounting is completed.

The Six States propose that a limited form of overrun accounting be instituted. It must be based on the following principles:

- 1.) Overruns must be inadvertent.

- 2.) Overruns may not exceed 7% of annual entitlement.
- 3.) Overruns must be repaid the following year by the entity that benefitted from the extra water unless the following year's operation is controlled by the flood control regulation and water must be released beyond downstream demands.

VII. Control of Illegal Diversions and Uses

The implementation of interim reservoir operating criteria cannot stand alone in the water management of the Lower Colorado River. The Six States' concern about California's continuing use of Colorado River water above its basic apportionment is an indicator that they believe that the era of limits in the Lower Basin has begun. In order to implement and enforce these limits so that other states or individual water entitlement holders are not adversely impacted, the Bureau of Reclamation must move forward with its identification of Lower Basin water users who are either exceeding contract entitlements or are diverting water without a contract. The Bureau must take steps necessary to require more accurate measurement and reporting of diversions. It must also develop accurate techniques for determining both measured and unmeasured return flows to the river. The issues of withdrawal of Colorado River water from wells must be dealt with either by adopting a modified version of the "bright line" approach currently being considered by the Bureau or by some other scientifically and legally valid approach. The Bureau must consult with the affected states and water users before proposing any final regulation, but it should establish a schedule and process to undertake this necessary step.

VIII. Conclusion

The Governor's representatives of the States of Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming have stated on numerous occasions their desire to work with representatives of California to develop and implement a plan that will, over time, eliminate California's dependence on Colorado River water above its 4.4 maf basic apportionment. One critical component of that plan is the implementation of interim Lake Mead reservoir operating criteria that will provide California M&I entities greater security of supply through the Colorado

River Aqueduct than currently exists. The Six State Representatives conditioned their willingness to work on mutually agreeable interim operating criteria on California's commitment to enter into a defined, enforceable program to reduce its dependence on Colorado River water over its basic entitlement in a way that avoids undue risk of shortage to other Basin States. While California has not yet completed the 4.4 Plan that will create the framework for the defined, enforceable program that the Six States require, it has made meaningful progress. In recognition of that progress and in order to move the discussions forward, last October the Six States set forth their principles for defining the interim operating criteria. They have now added additional explanation and detail to those principles.

The Six State proposal is based on a number of legal and policy considerations. Critical to these considerations is that the interim operating criteria must be accomplished within the existing "Law of the River." Also, any risk of future shortages resulting from the interim operating criteria must be borne by those who benefitted. The proposal for surplus determination is similar in approach to that proposed in the December 1997 Draft California 4.4 Plan, but contains differences in several of the specific provisions. The Six States also believe that issues of shortage criteria, overrun accounting, and control of illegal diversions and uses must be addressed and have suggested how those issues should be resolved.

The representatives of the Six States believe that this proposal should be viewed as a positive step toward the successful completion and implementation of the California 4.4 Plan. They believe the time has come to expedite discussions with California's representatives on these critical Colorado River issues.