UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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April 30, 2007

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Subject: Draft Environmental Impact Statement for Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead Under Low Reservoir Conditions, Lower Colorado River Basin

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act. Our detailed comments are enclosed.

EPA supports the development of shortage guidelines which will provide specific criteria for reductions in annual water deliveries during low reservoir conditions. The beneficial uses of the Lower Colorado River are diverse, providing vital environmental, economic, and public health benefits for Arizona, California and Nevada (Lower Basin States). Unpredictable, large disruptions in water deliveries or sudden changes in Lake Mead and Lake Powell operations could have significant adverse impacts on these beneficial uses. The draft environmental impact statement (DEIS) makes clear that action is required to address future shortages. All of the action alternatives would reduce the probability of shortages and increase the flexibility to operate the Colorado River water supply system for multiple purposes.

We commend the Bureau of Reclamation (Reclamation) and cooperating agencies for evaluating a range of alternatives that define the trade-offs between different users and benefits, such as water supply, hydropower generation, and recreation. We recognize that Reclamation is convening a workgroup of climate change experts to evaluate the water supply implications of climate change, and we support the consideration of this information in your final decision-making on this project. EPA supports the overall approach as proposed in the Conservation Before Shortage and Basin States alternatives, in particular the concepts of voluntary shortages prior to involuntary shortages and the storage and delivery of conserved system and non-system water (water banking).

Based upon our review, we have rated this DEIS, and the proposed action alternatives, Environmental Concerns - Insufficient Information (EC-2) (A *Summary of EPA Rating Definitions* is enclosed) due to concerns with potential adverse effects to beneficial uses and the need for additional information regarding the effects of climate change, banking of conserved water, and monitoring. EPA is concerned that long-term reduction of water quantities and availability due to drought, shortage declarations, climate change, and increasing growth and water demand will result in adverse impacts to in-stream resources (riparian habitat, fish and wildlife), water quality, water supply management flexibility and associated cumulative impacts. Additional information on changing climatic conditions and water management mechanisms will contribute to more systematic water resources planning and further explain key components of proposed actions.

We recommend Reclamation develop a comprehensive, annotated list of water management tools available to Colorado River users to further enhance the Colorado River system flexibility and the benefits of the proposed approach. In that regard, we recommend the final environmental impact statement (FEIS) include a description of, and commitment to, a detailed monitoring, adaptive management, and water banking accounting plan. The shortage guidelines should be based upon the principles of: 1) collaboration, partnerships, and a transparent public involvement process; 2) protection of the environment, human health, and beneficial uses of the Colorado River; 3) minimization of involuntary reductions; and 4) mitigation of direct, indirect, and cumulative impacts. EPA supports system management for small, predictable reductions in annual water use versus large, involuntary disruptions in water supply service and Colorado River flows.

We appreciate Reclamation's February 5, 2007 presentation to EPA on this project and the opportunity to provide comments on the DEIS. We would be glad to set up a conference call to discuss the enclosed recommendations. We look forward to continued participation in this process as more information becomes available. When the FEIS is released for public review, please send two copies to the address above (mail code: CED-2). If you have any questions, please contact me or Laura Fujii, the lead reviewer for this project. Laura can be reached at 415-972-3852 or fujii.laura@epa.gov.

Sincerely,

/s/ by Nova Blazej for

Enrique Manzanilla, Director
Communities and Ecosystems Division

Enclosure:
Summary of EPA Rating Definitions
Detailed Comments

cc: Jayne Harkins, Assistant Regional Director, Lower Colorado Region, BOR

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US Fish and Wildlife Service
Western Area Power Administration
Regional Tribal Operations Committee

EPA DETAILED DEIS COMMENTS LOWER BASIN SHORTAGE GUIDELINES AND COORDINATED MANAGEMENT STRATEGIES FOR LAKE POWELL AND LAKE MEAD UNDER LOW RESERVOIR CONDITIONS, LOWER COLORADO RIVER BASIN, CA, AZ, NV, APRIL 30, 2007

Conservation and Water Use Efficiency

The Basin States and Conservation Before Shortage alternatives include water management tools which would enhance the management flexibility of the Colorado River system. EPA strongly supports the implementation of these tools to maximize water conservation and water use efficiencies – key components of supply and demand management – if adverse effects on third parties (e.g., downstream users, in-stream beneficial uses) are minor. Innovative and aggressive supply and demand management is essential in assuring a long-term, sustainable balance between available water supplies, demand, and ecosystem and public health. Efforts to improve system flexibility, conservation, and water use efficiencies are even more urgent given the projected growth in the Lower Colorado River Basin, the adverse effects of the multi-year drought, and the potential adverse effects of climate change on scarce water supplies.

Recommendations:

We urge the Bureau of Reclamation (Reclamation) to include a detailed tool kit of supply and demand management measures in an appendix in the Final Environmental Impact Statement (FEIS). This appendix could serve as an extension of any of the action alternatives; further enhancing Colorado River system flexibility and the benefits of the proposed management approach. The list of tools could also serve as a resource for Colorado River water providers (e.g., water districts, irrigation districts) who wish to maximize the effective use of their water supplies. The appendix should describe the full range of tools available to users to improve water quality and reuse, maximize water use efficiencies, balance supply and demand, and avoid and minimize adverse effects to third parties. The description of these tools should include a report of each tool's potential adverse third party effects, its ability to enhance water management flexibility, mitigation opportunities, and the most appropriate entities to use the tool.

As recommended by the Water Science and Technology Board (National Academy of Sciences)[1], we urge Reclamation to work with Colorado River users to conduct a comprehensive, action-oriented study of Colorado River region urban and agricultural water practices and changing patterns of demand. If integrated with the proposed shortage guidelines, this study could provide a more systematic basis for water resources planning across the region. We recommend the FEIS address the need for this study and how and when the study could be conducted.

[1] Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability (2007), p. 9. Water Science and Technology Board, National Academy of Sciences, 500 Fifth St. N.W., Washington, D.C. 20001.

Efficient water use can be influenced by development, infrastructure, and drinking water policies. We recommend the FEIS explore the linkages between these different factors and describe potential mechanisms to align them in order to better protect water resources. We recommend the FEIS provide a short discussion of who could best implement the identified mechanisms. The following reports may be of assistance as a starting point for your evaluation:

- Growing Toward More Efficient Water Use: Linking Development, Infrastructure, and Drinking Water Policies. EPA Publication 230-R-06-001, EPA National Service Center for Environmental Publications, (800) 490-9198 or nscep@bps-lmit.com.
- Protecting Water Resources with Higher-Density Development. EPA publication 231-R-06-001. EPA National Service Center for Environmental Publications, (800) 490-9198 or nscep@bps-lmit.com.

We recommend the Affected Environment chapter of the FEIS describe the current efforts to increase conservation, water use efficiencies, water supplies, and management flexibility for the Colorado River system. For instance, provide a summary of Arizona's Drought Management Plan, efforts by California to ensure adequate water supplies for southern California, and the conservation and use measures being taken by the Southern Nevada Water Authority (SNWA).

Storage and Delivery of Conserved Water (Water Banking in Lake Mead)

The DEIS analysis clearly demonstrates the benefits of the storage and delivery of conserved water (water banking). These benefits include the reduced probability of shortages, increased Colorado River management flexibility, and increased probability for flows below Morelos Diversion Dam, under some alternatives, that could benefit the complex riparian ecosystem of the Limitrophe Reach (Northern International Boundary to the Southern International Boundary) (p. ES-14, p. 4-76) and Colorado River Delta.

Recommendations:

The Basin States alternative limits the use of water banking in Lake Mead to the Lower Basin States while the Conservation Before Shortage alternative allows other entities, including Mexico, to utilize this water bank. The allowable total amount of stored conserved water also varies between alternatives. In order to fully realize management flexibility through water banking, EPA recommends the selected alternative maximize the use of water banking by allowing a broad range of users and ample storage capacity for conserved water.

The Conservation Before Shortage alternative includes the concept of compensated voluntary water reductions, triggered by specific Lake Mead elevations and financed through a compensation program. Under this concept willing Lower Basin users, including Mexico, would be paid to voluntarily and temporarily reduce their water use (p. 4-82). To facilitate regional efforts to optimize water use, we recommend the FEIS provide additional information on Lake Mead elevation triggers, funding mechanisms, and management of the compensated voluntary water reduction program.

We recommend the FEIS include a detailed description of the accounting procedures and conserved water validation process for the storage and delivery of conserved water in Lake Mead.

Monitoring and Adaptive Management Plan

The DEIS analysis depends heavily on probabilistic models based upon a number of assumptions regarding precipitation, climate, water supply depletion rates, water supply policy and trends, and conservation programs. We recommend that existing conditions be monitored and model assumptions validated.

Recommendation:

Given the assumptions and uncertainties surrounding probabilistic models, we recommend Reclamation develop and commit to a detailed monitoring and adaptive management plan as part of the FEIS. We recommend the plan include details on what, who, and when to monitor; the process used to ensure monitoring results feed into the management decision process, and how monitoring can be used to help verify model assumptions.

The ability to monitor the hydrology of the Colorado River is provided by the U.S. Geological Survey's Colorado River Streamflow Gaging Network. As stated by the Water Science and Technology Board,[2] financial support for these stream gaging stations has been inconsistent and limited in recent years. The loss of stations with long periods of record (greater than 30 years) is of concern because they provide key data for understanding Colorado River hydrology and water quality (e.g., downstream perchlorate contamination, temperatures, sedimentation) and thus for Colorado River water management.

Recommendation:

We recommend the FEIS describe how Reclamation and other users of the Colorado River can ensure resources are available to maintain and expand the Colorado River Streamflow Gaging Network.

Climate Change

A number of studies specific to the Colorado River Basin have indicated the potential for significant environmental impacts as a result of changing temperatures and precipitation.[3] While we commend the inclusion of the hydrologic sensitivity analysis to determine model results with a wider range of hydrologic variability (Appendix N), we believe that a more extensive discussion of climate change and its potential effects on the proposed action would better serve long-term, Basin-wide water management planning.

Recommendation:

[2] Water Science and Technology Board, pps 4-5.

[3] For example, Colorado River Basin Water Management: Evaluating and Adjusting to Hydroclimatic Variability (2007); The Colorado River Basin and Climatic Change, Linda L. Nash & Peter H. Gleick (1993) (EPA Publication 230-R-93-009).

We recommend the FEIS include a separate discussion of climate change and its potential effects on the proposed action and the action's impacts. We recommend this discussion provide a short summary of climate change studies specific to the Colorado River Basin, including their findings on potential environmental and water supply effects and their recommendations for addressing these effects. Potential effects to examine include the incremental effects on shortage allocations and land use. For example, if there is a projected 10-20% reduction in precipitation for the Colorado River[4], we would recommend the FEIS describe the effect on potential shortages, whether California would experience a higher probability of shortages, and whether adverse land use effects, in addition to temporary agricultural fallowing, could occur under a shortage determination.

Tribal Impacts

The DEIS provides a limited description of the Cocopah Indian Reservation (p. 3-84), the Limitrophe Reach, and potential cultural resources in this region. Twelve miles of the Limitrophe Reach lie within the Cocopah Indian Nation. This reach includes a complex riparian ecosystem that supports a wide variety of birds and wildlife. The multi-agency effort, in cooperation with the Cocopah Indian Nation, to restore 350 acres of this habitat signifies the ecological importance of the Limitrophe Reach. We also note that the Cocopah Indian Nation and their cultural interests extend down to the Colorado River Delta.

Recommendations:

We recommend the FEIS include a more detailed description of the ecological resources of the Limitrophe Reach and of cultural resources below Imperial Dam to the Southern International Boundary. Potential impacts to these resources should be fully evaluated and described in the FEIS. We recommend the FEIS include a description of the Cocopah Indian Nation, including a description of their tribal interests and concerns down to the Colorado River Delta and potential effects on these tribal interests.

Power Generation

Although the action alternatives would have minor impacts on the economic value of electrical power generation at Glen Canyon and Hoover Dams, the total loss of electrical power generation capabilities would have a substantial effect on the Basin Power Funds which rely on power revenues (pps. 4-230, 4-241). These funds provide key support for Colorado River environmental programs, the Colorado River Salinity Control Program, and projects to address Tribal water right settlements.

Recommendation:

EPA is concerned with the potential reduction of the Basin Power Funds. We recommend the FEIS describe potential mitigation measures that could be included in the selected alternative to offset or replace these revenue reductions.

[4] Nash and Gleick, p. ix.