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AMERICA OUTDOORS * GRAND CANYON RIVER GUIDES
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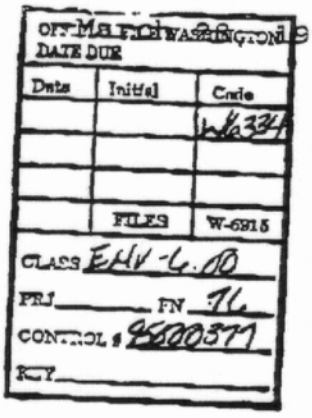
SIERRA CLUB LEGAL DEFENSE FUND * FRIENDS OF THE RIVER
ENVIRONMENTAL DEFENSE FUND



Daniel Beard, Commissioner
Bureau of Reclamation
1849 C Street, NW - Room 7654
Department of Interior
Washington, DC 20240

Dear Commissioner Beard,

We congratulate the Bureau of Reclamation for completing the Final Environmental Impact Statement on Glen Canyon Dam operations. We agree that this effort represents an essential and long-overdue change in how the Bureau regards its responsibility to protect the downstream resources of Grand Canyon and Glen Canyon.

We have strongly supported the EIS process. However, as you noted in your statement announcing the release of the Final EIS, we have serious concerns about two changes made to the preferred alternative between the draft and final EIS. Specifically, we believe that the increase in upramp rate from the existing 2500 cfs/hr to 4000 cfs/hr, and the increase in maximum release from the existing 20,000 cfs to 25,000 cfs may not comply with the mandate of the Grand Canyon Protection Act to "protect, mitigate adverse impacts to, and improve the values" of Grand Canyon National Park and Glen Canyon National Recreation Area.

Both of these changes were sought for some time by the hydropower industry to enhance the dam's capacity and flexibility for hydropower generation. Neither of these changes is beneficial to the downstream environmental, recreational or cultural resources for which the GCPA requires the Bureau to manage flows from the dam.

We appreciate the efforts that the Bureau has made to date to ensure an open, public process during the reevaluation of dam operations. Through the process a new, more productive, level of

trust has been developed between traditional adversaries. The basis of that trust lies in the confidence by all parties that the scientific process and analysis are credible, thorough and available for all to evaluate. Presently, two other proposals to change operations are under consideration: seasonally adjusted steady flows and the "Habitat/Beach Building Flow". Both are designed to benefit downstream resources and both have been postponed to complete a comprehensive scientific review and analysis. Similar thoroughness should be applied to upramp and maximum discharge changes which may harm downstream resources. To be consistent, the burden of proof must lie with the proposed change.

We have been told by representatives of the Bureau and the Western Area Power Administration that these changes will have little if any significant impact on downstream resources. However, we know of no specific tests of these changes, no documented and peer-reviewed conclusions from such tests, and no opportunity for public review and comment on such conclusions. We urge that these changes not be part of the Record of Decision until these steps are taken.

Our goals are not only to prevent harm to downstream resources in Glen and Grand Canyons, but also to ensure that the process of adaptive management, through which appropriate changes to dam operations are expected to take place, is of the highest scientific integrity. We believe the Bureau should be extremely conservative with respect to downstream resources when operating Glen Canyon Dam.

We greatly appreciate your commitment to work with us on resolving our concerns before the Record of Decision is signed. Meanwhile, we will continue to work with the Bureau and other appropriate parties during this time.

Sincerely,

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CC: Charles Calhoun, Regional Director
Bruce Babbitt, Secretary

Letter From Sierra Club, Grand Canyon Trust, American Rivers America Outdoors, Grand Canyon River Guides, Trout Unlimited, Arizona Flycasters, Sierra Club Legal Defense Fund, Friends of the River, Environmental Defense Fund

Page 1, Paragraph 2

Comment: Changes may not comply with the mandate of the Grand Canyon Protection Act.

Response: The changes would comply with GCPA since they would not result in adverse impacts to resources in Glen and Grand Canyons.

Page 1, Paragraph 3

Comment: Changes only benefit hydropower not Canyon resources.

Response: Clearly, the reason for these changes is to benefit hydropower. However, the Interim Operating Criteria were based on results from GCES Phase I, professional judgement, and were designed to be conservative over the interim period. Now with the benefit of GCES Phase II results and EIS impact analysis, the up ramp and maximum flow criteria were found to overly conservative for the long term.

Page 2, Paragraph 1 (partial)

Comment: The seasonally adjusted steady flow alternative and the beach/habitat-building flow were postponed to complete comprehensive scientific review and analysis. Similar thoroughness should be applied to up ramp and maximum flow change. The burden of proof must lie with the proposed change.

Response: Seasonally adjusted steady flow is not the EIS preferred alternative because there was no clear benefit to canyon resources over the Modified Low Fluctuating Flow Alternative. However, preferred alternative (modified low fluctuating flows) did offer greater benefits to hydropower. The endangered fish research flows and beach/habitat-building flow are part of the preferred alternative and have not being postponed for comprehensive scientific review and analysis.

Endangered Fish Research flows are being designed to learn more about the interactions between low steady flow, native fish, and non-native fish. Time is needed to formulate hypotheses and design experiments to test these hypotheses.

Beach/habitat-building flow have been postponed pending resolution of legal questions. Reclamation is eager to conduct a test of the beach/habitat-building flow as soon the legal issues have be resolved.

Page 2, Paragraph 2

Comment: We know of no specific tests of these changes, no documented and peer-reviewed conclusions from such tests, and no opportunity for public review and comment on such conclusions. Urge that changes not be part of the ROD.

Response: A complete range of research flows were conducted from June 1990 to July 1991. These included high and low fluctuating flows with fast and slow up and down ramp rates. GCES Phase II identified cause and effect relationships between the range of fluctuations (and down-ramp rates) and adverse impacts to canyon resources. However, no cause and effect relationships between up ramp rates and adverse impacts to canyon resources were identified. The DEIS (a public document peer reviewed by GCES) states on page 95 that up ramp rates have not been linked to sandbar erosion. The DEIS also states on page 190 that "Rapid increases in river state would have little or no effect on sandbars."

Sand in Grand Canyon is transported by nearly all riverflows, the amount transported increases exponentially with riverflow. Maintaining sandbars over the long term depends on the amount of sand supplied by tributaries, monthly release volumes, range of flow fluctuations, and the frequency and duration of floodflows. Occasional flows between 20,000 and 25,000 cfs may cause minor amounts of beach building and water riparian vegetation.

As part of the EIS, the effects of each alternative on long-term sand storage in Marble Canyon (river miles 0 to 61) were analyzed. For each fluctuating flow alternative, the analysis utilized 20 years of hourly flow modeled by Spreck Rosekrans of EDF and 85 different hydrologic scenarios (each representing 50 years of monthly flow data). This analysis was documented in DEIS on page 182 and Appendix D, pages 4-5.

Results from this analysis showed that the probability of a net gain in riverbed sand after 20 and 50 years was 61 and 70 percent for the Moderate Fluctuating Flow Alternative and 64 and 73 percent for the Modified Low Fluctuating Flow Alternative (preferred alternative), DEIS, pages 54-55, 184, 187, and 194. Results from these two alternatives only differ by 3 percentage points even though the differences in operating criteria are greater than changes in the preferred alternative between draft and final EIS. The operating criteria for range in daily flow fluctuations, up and down ramp rates, and maximum flows of the Moderate Fluctuating Flow alternative were all greater than those of the preferred alternative in both the draft and final EIS.

The DEIS stated on page 28 that:

> *Additional information on the effects of dam operations has been gathered since the interim operating criteria were developed. Some of this preferred alternative's parameters could change slightly in the final EIS based on possible adjustments to the interim operations, new information, or public comments.*

The public was given a 90 days to comment on the DEIS and over 34,000 comments were received on the document.

Page 2, Paragraph 3

Comment: Adaptive management process should be of the highest scientific integrity. Reclamation should be extremely conservative with respect to downstream resources.

Response: Reclamation has spent ten of millions of dollars on research in Grand Canyon during GCES Phases I and II, prepared an EIS, and has learned a great deal about the effects of dam operations on Grand Canyon resources. An "extremely conservative" approach to resource management would not meet management objectives over the long-term. For example, an extremely conservative approach to managing long-term sand storage would suggest incorporating the Year-Round Steady Flow Alternative. This alternative would result in the maximum amount of riverbed sand storage but also in the most vegetated and lowest elevation sandbars.

Other Letters

Comment: Do not change 2 parameters at once.

Response: Although upramp rates of the preferred alternative could be implemented immediately, flows greater than 20,000 cfs of any significant duration or frequency would not occur for at least a year or more because of hydrology and the current low elevation of Lake Powell.

The maximum flow constraint is normally overridden by the monthly release volume and the maximum daily fluctuation constraint. Because of the maximum daily fluctuation constraint, maximum flows between 20,000 and 25,000 cfs would only be possible when monthly release volumes are between 900,000 and 1,500,000 acre feet. When monthly release volumes are 1,500,000 acre-feet, hourly releases would be steady at 25,000 cfs. Based on historic operations, monthly release volumes in this range are only expected to occur in 15 percent of the months.

Minimum release years typically occur when Lake Powell is drawn down (such as now) and monthly release volumes during these years are normally less than 900,000 acre-feet. Therefore, flows greater than 20,000 cfs are not expected to occur at any significant duration or frequency for at least a year or more.

Spreck Rosekrans of EDF, performed additional analysis of dam operations for all July months over the long term which includes all types of water years. July, August, December and January are peak power months. Release volumes in peak power months are typically higher than the remaining off-peak months.

Rosekrans reports that, as a long-term average, maximum release would be greater than 22,500 cfs 11 to 17 percent of the hours and occur in 19 to 46 percent of the days in July. However, 6 percent of these hours and 6 percent of the days occur during periods of high steady flow. The analysis also indicates that in months where the release volume is 900,000 acre-feet or less (typical during a minimum release year), flows would exceed 22,500 cfs 0 to 2 percent of the hours and occur in 0 to 2 percent of the days in July.