



United States Department of the Interior

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IN REPLY REFER TO:
N1632(GRCA)

February 19, 2008

Mr. Randall Peterson
Bureau of Reclamation
Upper Colorado Region
125 South State Street, Room 6103
Salt Lake City, Utah 84138

Reference: Environmental Assessment for Experimental Releases from Glen Canyon Dam, Coconino County, Arizona, 2008 through 2012

Dear Mr. Peterson:

On February 8, 2008, the Bureau of Reclamation released for public comment an Environmental Assessment (EA) on the proposed high-flow and fall steady flow experiment on the Colorado River. This experiment is proposed to occur downstream from the Glen Canyon Dam and through Grand Canyon National Park in early March of 2008 and subsequently September and October for the next five (5) years.

Accordingly, Grand Canyon National Park is submitting comments on the EA during the public comments period that ends on February 22, 2008. The following are Grand Canyon's comments on the EA divided into three (3) sections – Key Concerns, General Comments and Specific Section Comments.

Grand Canyon National Park believes that the execution of high flow experiments is consistent with the Grand Canyon Protection Act, the NPS management policies of 2006, the results of recent science, the 1996 ROD on the operation of the Glen Canyon Dam. We do have concerns over the costs of the experiment and the lack of use of scientific information and study results to discuss the need for future high flow experiments that could benefit the resources of Grand Canyon National Park.

Analysis of the draft Environmental Assessment and proposed action (including strict limitations on future flows, a short-duration steady flow regime in the latter part of the monsoonal period, and other key factors) indicates these measures would likely result in impairment of the resources of Grand Canyon National Park. The EA as written appears to be in conflict with NPS 2006 Management Policies, may not be consistent with CEQ guidelines and is significantly in conflict with our understanding of the science and inconsistent with the intent of the Grand Canyon Protection Act and the 1996 ROD. We also believe that if significant changes are made to the EA, these impacts could be avoided.

While we regret that we were not included as a cooperator nor included in deliberations on this issue, we remain committed to making changes to the EA that address the key concerns outlined below and will allow the experimental high flow to move forward. It is our position that a FONSI cannot be signed unless

these key concerns are met and changes to the document are made regarding the resources of Grand Canyon National Park.

Key Concerns

1. The purpose and need and the reasons for the action need to be more closely tied to the Grand Canyon Protection Act, the Secretaries responsibilities under the Act, and the approved Science Plan for the experimental flow. This discussion must include a connection to the 5 years of the fall steady flow. Currently, the EA does not clearly express the purpose and need, proposed action or how the addition of steady flow periods articulates with the science plan. We request that the steady flow component be separated out of this document and simply focus this EA on the March high flow event.
2. Results of research over the past 10 years need to be utilized and cited to support the creation of action alternatives and impact analyses. The citations in the EA are limited and dated, and personal communications should not be the basis for such important decisions. It is not apparent where the 80 million dollars in research, conducted over the last 10 years has been used in this decision making process. Our analysis shows that this document is not consistent with current best information.
3. A reasonable range of alternatives has not been presented and analyzed, including seasonally adjusted steady flows as originally articulated by the USFWS. Since this EA is intended to tier to previous environmental documents, enhancing the range of alternatives by using alternatives developed in previous environmental documents would provide an avenue for addressing many of the concerns relative to the original Record of Decision and subsequent legal challenges.
4. An economic analysis needs to be accomplished that is supported by independent research to address the concerns raised relative to costs and environmental justice. Those costs that are truly related to the experimental plan need to be reflected in the EA.
5. A review of the costs (approximately 4 million dollars) associated with the science plan needs to be accomplished that shows the true cost of the experimental plan research vs. the on-going costs associated with routine research and monitoring. Only those costs that are truly related to the experimental plan need to be reflected in the EA. These costs should be discussed in the EA in a section that is not devoted to hydropower. We recommend a detailed analysis into the value of the current science program, a review of the deliverables, a review of the use of science in the AMP process and the efficiency of the current science program. Our analysis shows that significant savings to power revenues could occur through a more effective AMP process and more efficient science program. The document gives the impression that the inflated costs of this experiment are the norm, when significant data could be gathered from a HFE for 25% of the costs of this experiment. This should be made clear in the document.
6. If this EA is to reflect an experiment over the next 5 years, inclusion of additional high flow experiments must be included. This needs to be clarified in the EA and decision document to indicate that DOI expects to consider additional high flow tests within the implementation period of the EA to test the hypotheses of long-term sediment sustainability. NPS, Reclamation and USFWS need to be involved in determining resource triggers (both humpback chub and sediment) to justify and guide the experimental flow program into the future. Based on current scientific information lack of inclusion of additional high flows could lead to impairment of the resources of Grand Canyon National Park.
7. Explanation of the 2-month steady flow portion of the proposed action lacks scientific evidence related to resource benefits. The reasoning behind the timing and duration of the flow seems to

contradict statements in the document. Longer duration seasonal steady flows have been proposed by the USFWS as part of the Reasonable and Prudent Alternative (RPA) in the Glen Canyon Dam Environmental Impact Statement, with high steady flows in the spring and low steady flows in summer and fall. These provisions are part of the environmental commitments made by the Secretary upon signing the Record of Decision for Glen Canyon Dam operations in 1996. Per the RPA, Reclamation was to include a program of experimental flows to include seasonally adjusted steady flows as part of the adaptive management program. Inclusion of a seasonally adjusted flow regime per the RPA would be an appropriate alternative for this EA and would likely be the preferred alternative. If Reclamation, through this EA, is changing the 1996 commitment to a test of seasonally adjusted steady flow, it should be clearly articulated in this decision document.

8. The alternatives include information on post high flow event scenarios. Previous high flows have been followed by ROD flows that have been shown to be erosive. This experimental flow should be followed by prescriptive flows to insure the gains made (i.e. sandbars and backwaters) are not immediately eroded and research data preserved. This will also help prevent significant effects to the resources of Grand Canyon National Park. A seasonally adjusted flow scenario would accomplish this as would the proposed maintenance flows described in the 1995 FEIS.
9. Given that one of the primary purposes of the experimental flows was to provide further evidence and understanding of protected aquatic resources, the preferred alternative must address how the action will address Endangered Species Act concerns, most specifically the biological assessment/opinion for the humpback chub. The plan should state how the actions are being instituted to improve conditions for the chub in the system and how the conservation measures will be incorporated into the DOI decision. There needs to be a commitment as part of the implementation of this 5-year program to fund the conservation measures as part of the experimental program.
10. The plan should include targets or desired future conditions so that measurements can be made through the research and science program on the effectiveness of the action. Nowhere in the document are measures of success (or failure) articulated. These conditions need to be clearly stated so that the Secretary will know the value of his action.

General Comments

- Clarify the purpose of the action; why is BOR undertaking this action? The information provided in the introduction is contradictory, especially relative to the primary purpose of Glen Canyon Dam (is it water conservation and storage or is it water delivery?)
- The introduction needs to clarify what the experimental action is and why the agency is proposing to take it. Currently, the action is loosely described as the experimental high flow (presumably one flow) and steady flows (more than one). How can a 5 year program of steady flows be adequately addressed in this environmental assessment?
- The document claims to be tiered to the GRCA CRMP. This is incorrect; the CRMP is a visitor use document and the experimental flow(s) is unrelated to that management plan.
- The document is very general in its claims, with little specific information to lend credence to the statements made. More citations would help explain and justify the statements in the document.
- In the purpose and need section, the document needs to recognize that “project purposes of the dam” includes those purposes outlined in the Grand Canyon Protection Act, not just water conservation and storage.

- The purpose and need section should also articulate what the stated objectives are for this experimental high release in a similar way as the document explains what the objectives of prior high releases were (Schmidt et al 1999:30).
- If the GCMRC Science Plan is being used as the guiding document for the research to be conducted under this EA, more description needs to be included. On page 6 of the draft EA, the Science Plan is mentioned for the first time, without any explanation or context.
- The introduction of the steady flow component of the experiment is not well articulated and the science behind the notion of fall steady flows (rather than summer or seasonally adjusted) is not documented.
- For NEPA purposes, the document states that prior scoping and analyses were used, although it is unclear how or when information on the 2-month fall steady flow proposal was gained. Information was provided to back up the statement concerning high experimental flows (1996 and 2004), but there is no information to suggest that the 2-month fall steady flow period was ever scoped with the public or analyzed in other documents. If the fall (September and October) is the right period of time for steady flows, the document needs to reference the scientific work to support the claim.
- The document needs to explain the timing of the high flow with the steady flows. In section 1.3, Relevant Resources, the text states that “this new proposal follows the high flow with steady fall flows;” how do steady flows 6 months after the high flow equate to “follows” in the context of a holistic experiment?
- The preamble to the alternatives (section 2.0) should clearly state what the alternatives are intended to do. The text discusses population increases to the humpback chub and consultation efforts under the Endangered Species Act. It is hard to understand what or why the alternatives are what they are. Additionally, the document states that there are two experimental alternatives, yet one is the no action alternative (which does not have an experimental component). Therefore, there is really only one experimental alternative.
- The proposed action (2.2) needs clearer explanation of the reasoning behind the 2-month fall steady flow proposed for 2008 - 2012. Logic would suggest that if the high flow is intended to determine the effectiveness of sandbar building and backwater formation with the intent that humpback chub will use the backwaters, then it would seem that fluctuating flows would immediately diminish the newly created sandbars and backwaters. The timing of the steady flow in the fall is stated to be tied to young-of-year chub, yet in other places in the document the fall steady flows are attributed to concerns with environmental justice. The design of the experiment needs to be tied to science and the positive resource benefits we anticipate. Previous work has documented that ROD flows following high flow events erode the newly created sandbars. This experiment should not follow the same path as those of the past 10 years.
- In the description of the steady flows, it would be helpful to indicate what the flows will be; great detail is provided for the high flow event, yet little information is provided on the fall steady flows other than they will occur for 5 years in September and October.
- The explanation of the action is unclear (pages 10-11), with little value added by discussing the interim guidelines and the four tiers of operation.
- Reference is made to NHPA compliance, but it is unclear if this EA is a combined NEPA/NHPA compliance document or if NHPA will be addressed separately. The compliance requirement for the one site to be mitigated is actually being addressed through the 1994 Programmatic Agreement on

Glen Canyon Dam operations. The previous compliance should be referenced, especially given that this EA is tiered to previous compliance actions.

- The opening paragraph of section 3.0 needs to have additional information concerning the interdisciplinary team and how they determined that only one action alternative was appropriate and how they determined that the only adverse impact would be to hydropower (“a disproportionate and significant adverse impact on low-income power customers”). These statements are unsubstantiated.
- The environmental impacts section (3.0) should follow the list of issues as identified in Table 1. The section begins with Natural Resources, 3.1, and is not listed in the table.
- There is one cited reference that was not in bibliography (eGRID 2006) and one reference to an "unpublished report". There are also numerous (personal communication) references that overall represent the inadequacies of the entire EA.

Specific Section Comments

- Section 1.3 - No criteria for evaluation is identified. Usually definitions for "negligible" and "significant" impacts are defined or thresholds of significant impact are quantified for each of the primary resources evaluated. Without clear criteria for whether the impact is significant or not, how can an agency assign a FONSI or make any other determination?
- Section 2.2 – Need some example of hydrograph of proposed action. The table with min/max is not instructive.
- Section 2.2.1 – The document states “significant adverse environmental justice impact, the impact was reduced by proposing a steady flow test during the fall instead of the summer...” This is a major argument of this EA, yet there is no attempt to quantify the impact upon the consumer of the steady flows in either the fall or summer. This quantification is imperative to determine if, in fact, the impact is “significant”.
- Section 3.0 - Introduction - "Disproportionate and significant adverse impact on low-income power customers" - Again, how do they define the minimal change in power rates as a "significant impact"?
- Section 3.1.4 – “uncertain of sandbar effects will persist”... Research clearly demonstrates that ROD flows following the HFE will degrade the sandbars. Therefore it is not uncertain, but in fact, very clear from the research that postponing the steady flows to the fall will degrade the sandbars.
- Section 3.1.4.2 – “A key question is whether a high flow under sediment enriched conditions might result in more lasting effect.” This question is not being tested by GCMRC because BOR is not proposing steady flows after the HFE.
- Section 3.1.5 – Third paragraph – This document should cite all the work by Carothers et al. regarding the effects of the first 10 yrs of controlled flows; *Baccharis emoryi* is misspelled; Tamarisk is the dominant phreatophyte, all others are posers.
- Section 3.1.5.1 – First paragraph – The reliance on local demonstration of ecological phenomena (e.g., Stevens and Waring for flood impacts) indicates a dangerously insular view of the autecology of these species.
- Section 3.1.5.1 – Second paragraph/second sentence – What will be the riparian zone “alternate” (sentence 2)? Here and elsewhere in the document the impacts of day-to-day operations of the dam on

vegetation composition and density are ignored. The vegetation section of the Kearsley et al. 2003 report on integrated resource monitoring showed definitively that things like the max flows or mean flows over a 3 month period had profound effects on the density and composition of vegetation in the riparian zone.

- Section 3.1.5.2 – First paragraph – This paragraph does not follow from its topic sentence. There is evidence of huge blooms of non-native Bermuda grass following the '96 high flows (see Art Phillips' report on Hualapai monitoring), and other high flow events (see Marianne Porter's MSc Thesis at the NAU Library).
- Section 3.1.5.2 – Second paragraph – The '96 high flows changed Kwagunt marsh into a wooded shrub land vegetation type. No wetland species benefited from the flows.
- Section 3.1.5.2 – Third paragraph – Again, post-flood, day-to-day operations have *at least* as great an effect on vegetation change as floods do. We suggest a discussion of the models in Kearsley's '03 report on vegetation monitoring.
- Section 3.1.5.2 – Fourth paragraph – Rather than being an argument for flooding, the Porter thesis showed pretty convincingly that the new habitats opened up after high flows were colonized quickly and completely by exotic species.
- Section 3.1.5.2 – Fifth paragraph – Succession and adaptation in the lower riparian area are more affected by day-to-day operations, not simply “along a gradient” specified here. This may be the biggest flaw in the vegetation section. Kearsley developed statistical models for cover and richness of vegetation in the 15, 25, 35, 45 and 60 kcfs stage elevations (plus in the general area of new high water zone) which included some elements of the flow regime of the previous 2 or 3 months to predict changes in vegetation density and vegetation species richness. GCMRC has these models created by Kearsley from the monitoring from 2001 to 2004 and should be able to make predictions regarding post-flow day-to-day operations.
- Section 3.1.6 – Third paragraph – This is misleading. Yes, Carpenter did show (as did Warren and Schwalbe before him) that the new high water zone has high herpetofauna densities, but both also showed that herpetofauna densities and activities are highest where the vegetation is minimal – herpetofaunas are cold-blooded and need basking sites and good line-of-sight opportunities (they are visual predators). This same misleading statement is repeated on the bottom of Section 3.1.6.2.
- Section 3.1.6.2 – Spence report is noted in bibliography as 1996 but in report as 1997. This report's conclusion that there are no expected impacts upon the frog population assumes that there is a robust population of frogs as was the condition during the 1996 report. That is not the case in 2008. With only two adults, it is uncertain what the impact of a high flow will be upon the frog population.
- Section 3.1.8 – Third paragraph/first sentence – Add “in the long term”. In 1996, some of the rebound was due to the clear, aquatic conditions, i.e. limited tributary sediment input after the high flow. This paragraph should address the impact of weather after the high flow in the rebound of the benthic algal and invertebrates, including forecasts for this spring and summer.
- Section 3.1.8 – Fifth paragraph – Running fluctuating flows after the high flow will remove many of the newly built backwaters. To maximize the positive impact of steady flow, the steady flow should be run when there are the most backwaters, i.e. immediately after the high flow.
- Section 3.1.9 – SWWF and Eagle river mile locations should be removed from this report. Endangered Species information should be treated with the same security protocols about geographic locations as archeological sites. Add note that there have been no SWWF citing in the Marble Canyon

in 2006 & 2007. Remove reference to Nankoweap Eagle congregation, flashing flooding destroyed trout breeding recently, so Eagles do not congregate at Nankoweap anymore.

- Section 3.1.10 – First paragraph – Need citation for conclusion that Cladophora have withstood much higher flows for longer duration (e.g. 1983-1986).
- Section 3.1.10 – Third paragraph – Word “flood” should be replaced with high flow.
- Section 3.2.1 – First sentence – Need citation for BOR Treatment Plan.
- Section 3.2.1 – Second sentence – Reword to read “Archaeological data recovery efforts are scheduled over the next 5-10 years.”
- Section 3.3.6 - "Electrical costs would create a slight, but disproportionately adverse impact among low-income households..." How if the impact is "slight", can it be considered "significant"? A quick evaluation of Executive Order 12898 suggests that the Bureau may be misinterpreting this executive order. The language in the EO is disproportionately high and adverse effect, NOT disproportionately adverse impact (BOR language). The words are the same, but the meaning is totally different. One says that the impact needs to be way higher for the poor than others to be considered under this EO and the other simply makes the threshold as any impact that will affect the poor more than others. By using the BOR interpretation, a rise in the entrance fee at Grand Canyon would be considered a “significant” impact since it has a disproportionate affect upon the poor, i.e. a dollar to someone who makes \$20K a year is more valuable to that individual who makes \$100K a year. In evaluating the EO, we do not believe that was the intent.

Should you have any questions concerning these comments, please contact me at 928-638-7945.

Sincerely,

/s/ Steve Martin
Superintendent