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March 3, 2004

Michael Gabaldon
Deputy Director of Operations
Bureau of Reclamation, Building 67
6th and Kipling
Denver, CO 80225-0007

RE: Supplemental Environmental Impact Statement for the Operations of Glen Canyon

Dear Mr. Gabaldon,

Living Rivers, Colorado Riverkeeper, American Whitewater, Arizona Wilderness Coalition, Bluewater Network, Californians for Western Wilderness, Center for Biological Diversity, Colorado Plateau River Guides, Escalante Wilderness Project, Friends of the Animas River, Friends of Arizona Rivers, Friends of the Earth, Friends of the River, International Rivers Network, Outdoor Adventure River Specialists, Inc., Tag-A-Long Expeditions, Inc., River Runners for Wilderness, Southern Utah Wilderness Alliance, Waterkeeper Alliance and Wilderness Watch are extremely concerned about the failure of the Glen Canyon Dam Adaptive Management Program (AMP) to mitigate sufficiently the adverse impacts of the operations of Glen Canyon Dam on the Colorado River ecosystem in Grand Canyon National Park.

The most recent AMP report, submitted to Congress in 2002, and subsequent scientific conclusions clearly indicate that the AMP has made little progress in meeting the mandate of the Grand Canyon Protection Act (GCPA). Nor has the AMP met the goals established in the 1995 Environmental Impact Statement (EIS) for Glen Canyon Dam, the Record of Decision (ROD), the Biological Opinion that analyzed the environmental impacts of Glen Canyon Dam, nor subsequent objectives set by the AMP itself.

The AMP has failed because the original EIS has inappropriate limitations, the AMP administrative process is ineffective, and the AMP lacks responsible leadership from the agencies of the Department of Interior (DOI): Bureau of Reclamation (BOR), National Park Service (NPS), US Geological Survey (USGS) and US Fish and Wildlife Service (USFWS). Unless these fundamental deficiencies are corrected, the dedicated efforts of all involved will continue to fail to restore the ecosystem in Grand Canyon National Park.

At the same time, scientific evidence shows that the AMP can not succeed in meeting program goals while constrained by the limitations set by the current EIS. It is evident that unless additional, more effective management options are implemented, the AMP serves only the purpose of documenting the decline of the Grand Canyon river ecosystem. Thus, more than enough evidence exists to require the immediate preparation of a supplemental environmental impact statement (SEIS), to examine in detail and anew the impacts of Glen Canyon Dam based on the significant failures of the present efforts and the myriad of changed circumstances that affect the Colorado River system.

Since the release of the ROD in 1996, it is almost certain that the razorback sucker has joined the growing list of endangered species that have become extirpated in the Grand Canyon ecosystem. Grand Canyon National Park now faces the extirpation of yet another endangered species, the humpback chub. The ROD specifically foresaw the need for the recovery of this native fish, as well to establish a second population of humpback chub and to reestablish a population of the razorback sucker. Yet, scientific evidence indicates that neither objective will occur. The humpback chub's alarming decline and the failure to reinstate the razorback sucker tops a growing list of new scientific information that was not available or known when the 1995 EIS was completed.

Based on past failures, new information and new realities, which we detail below, the Bureau of Reclamation, together with her sister DOI agencies, is obligated to undertake the process dictated by the National Environmental Policy Act [NEPA] in relationship to the operation of the Glen Canyon Dam. According to the regulations implementing NEPA: "agencies **shall** prepare supplements to either draft or final environmental impact statements if: (i) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." 40 C.F.R § 1502.9(c) (emphasis added).

Here, the dramatic decline of the humpback chub, the extirpation of the razorback, the failure of the BOR and the AMP to abide by the terms of the Biological Opinion and to meet the goals of the Grand Canyon Protection Act, and the wealth of new information relevant to the recovery of these species and their habitat combine to require such a supplement.

Listed below are the primary areas of concern:

1. The AMP has failed to improve sediment balance that drives the physical ecological component of the ecosystem

> New data collected since the EIS was completed confirms that the EIS needs to be modified to address sediment below Glen Canyon Dam. This is because the scientific community studying the native fish and involved in the recovery of these species, know far more about sediment dynamics than in 1992 when the EIS was developed. A core element of the ROD and the relevant Reasonable and Prudent Alternative (RPA) requires that BOR mitigate the impacts caused by the fact that sediment no

longer enters Grand Canyon's river ecosystem. The plan required that experiments be conducted to conserve sediment in the ecosystem of the Colorado River. The first experiment took place in 1996 with subsequent attempts in the year 2000. In each case, efforts failed to produce permanent benefits of preserving beaches, stabilizing cultural sites, and enhance critical habitat conditions as intended. The report to Congress and all supporting sediment research since concludes that net sediment loss from the ecosystem will continue to occur. Natural sediment inputs, combined with organic nutrients, is a fundamental pre-dam ecosystem components necessary to sustain native fish species. Returning to peak-power flows, in a weak attempt to reduce rainbow trout spawning success, will likely accelerate further the rate of sediment loss.

There are other adverse environmental impacts of sediment loss below Glen Canyon Dam not previously anticipated. The continued loss of sediment and inability to regularly enhance beaches has brought about a change in NPS management strategies concerning cultural resource protection in the river corridor. While NPS policies favor the preservation of archeological sites *in situ*, the BOR now finds it necessary to consider immediate salvage operations to save what remains of sites threatened by further beach erosion. This will add federal costs to the program and increase tribal concern for these remnants of ancestral origin. These immediate and vital remedies were not considered in the original EIS.

The sobering conclusions regarding the inability to improve sediment resources have brought about discussions on how to augment sediment inputs in addition to reducing outputs. Any attempt to import sediment into the ecosystem below Glen Canyon Dam will be very costly and is not evaluated in the current EIS. In light of the inability to conserve sediment and meet Lower Basin water allotments as planned, options for improving the sediment and nutrient budget to benefit native fish and cultural sites must be explored in a SEIS.

2. The AMP is non-compliant with the Endangered Species Act and USFWS program recommendations

A. Razorback Sucker

The Biological Opinion uses urgent language to call for specific improvements of critical habitat for the humpback chub and the razorback sucker by 1998. The document states, "If the [Fish and Wildlife] Service determines a study design can not be developed that is expected to provide information to support removal of jeopardy to the razorback sucker and humpback chub populations in the Grand Canyon and associated tributaries, **such will be considered new information and may be grounds for reinitiating formal consultation**." (p. 35) (emphasis added)

Considering that a live, adult razorback sucker has not been observed in Grand Canyon for the last few years, many senior scientists believe that the razorback sucker has been extirpated from the Colorado River in Grand Canyon National Park. The lack of response to respect performance criteria gives ample evidence

that jeopardy has not been removed, and is sufficient ground for reinitiating formal consultation and the NEPA process immediately.

B. Humpback Chub

Monitoring by the USGS through the Glen Canyon Monitoring and Research Center (GCMRC), has documented a major an alarming decline in humpback chub population. Since 1995, when the EIS was completed, the adult humpback chub population in the Little Colorado River has declined by 50 percent. Two years ago the GCMRC scientists estimated that the population could be as low as 1,100 fish. In April of 2003, the USFWS reported, "Results of this ongoing study indicate that despite low catch rates of nonnative fishes in the Little Colorado River, humpback chub continue to decline and that aging adults are not being replaced in the spawning population." (Sponholtz, Pam and Randy Van Haverbeke)

It is undisputed that there has been a major decline in the population of adult humpback chub. Some federal scientists have recently argued that while humpback chub numbers have indeed declined, the present population is stabilizing. Yet, these scientists present no evidence to support this assertion. Privately, some of the same scientists are also saying that extirpation for humpback chub is quite likely. In any case, both this rate of decline and the low absolute number of fish, constitute a vastly different humpback chub assessment than was assumed in developing the original EIS, and the steps necessary for humpback chub recovery.

Furthermore, there has been no progress made in establishing a second viable population of humpback chub in Grand Canyon as mandated by the ROD. Nor has a Management Plan for the Little Colorado River been implemented to protect the critical habitat of the humpback chub from pollution, reduction of instream flows, or truncation of their habitat due to unforeseen geologic events such as debris flows or landslides.

The RPA states that if sufficient progress is not made to remove humpback chub and razorback sucker jeopardy by 1998, then Seasonally, Adjusted Steady Flows (SASF) must begin at Glen Canyon Dam. This has not occurred. Additionally, the RPA also stated that in low water (drought) years, dam releases should be regulated using the SASF alternative. This, too, is not occurring.

As razorback sucker and humpback chub recovery efforts represented one of the cornerstones of the original EIS process, this new information, combined with the information we are presenting, constitutes ground to start a SEIS process.

3. Persistent drought conditions are likely to further complicate achieving program goals and are not being adequately considered or addressed

The Colorado River watershed is experiencing a fifth year of significant drought. Many climatologists are forecasting multidecadal drought conditions for the basin due to the occurrence of oscillating sea surface temperatures. This has already

dropped the water level in Lake Powell reservoir by 113 feet to 44 percent of storage capacity. While specific flow recommendations were prescribed in the RPA for low water years, no assessment of management options has been conducted to address the impacts of sustained drought on achieving GCPA goals.

The reduced elevation of Lake Powell reservoir has already stimulated changes in water quality and the aquatic environment below the dam. The river's temperature has increased about 2° C, which is changing the dynamics of the food web and increasing the rates of colonization by exotic species such as the New Zealand mud snail. This particular alien species was discovered in the ecosystem after the ROD was signed. As the surface of Lake Powell reservoir continues to drop nearer to the penstocks, new pathogens, parasites and other exotic species are likely to invade the ecosystem in Grand Canyon and complicate the conservation of endangered native fish. Elevated temperatures raise questions about how this may affect alien fish populations and this predation threat to endangered humpback chub.

Furthermore, more water development projects for the Upper Basin are now being considered to fully deplete the already over-allocated waters of the Colorado River. Drought, consumptive loss, and synergistic effects of these two elements were not considered in the EIS. Predictions confirm that due to factors such as drought and over-appropriation, low levels will become the norm, rather than the exception, for Lake Powell reservoir. As a result, the BOR and her sister agencies must revisit its review the environmental impacts of Glen Canyon Dam and update the analysis to account for this new development.

4. New information relating to implementation of a temperature control device has not been addressed

The drought situation has led to an increased concern over the unforeseen impacts associated with increased water temperature flowing into Grand Canyon from Glen Canyon Dam. While the original ROD encouraged managers to direct efforts to achieve warmer water temperatures to improve native fish recruitment, the EIS did not address in any detail the full range of impacts associated with such experiments. In 1999 uncertainty surrounding these impacts caused the BOR to shelve its plans to install a temperature control device (TCD) for Glen Canyon Dam's penstocks. Only the threat of legal action associated with the declining humpback chub population has resurrected the proposal. Although in 2003 the AMP Science Advisory Panel recommended full TCD testing and possible construction, along with flow modification and extensive research / monitoring, DOI has taken no action until just recently and even than, the agency suggested a program that is much downscaled. The Environmental Assessment for the proposed TCD is not adequate because of incidental take and other critical habitat factors for humpback chub that has changed since the implementation of the ROD.

Another concern surrounding the TCD involves the impact of the parasitic Asian tapeworm, which could proliferate and heighten the potential of disease for the humpback chub. Since the Asian tapeworm was not discovered in the ecosystem until after the ROD, it too constitutes new information to be addressed in the SEIS.

Certainly, some of the risks associated with the TCD could be overcome by incorporating other operational strategies, such as importing sediment into the system to disadvantage hunt-by-sight predators, and by initiating a periodic spike flow. These were not addressed in the original EIS, and therefore will also need to be incorporated into the SEIS process.

5. Credibility of the AMP science program is in question

A central component of the original AMP design was the development and administration of an independent, peer-reviewed science program. This program would carry out unbiased scientifically credible studies to inform the AMP's decision-making process. A small science staff (less than 12) was to administer the program through the competitive bidding process and to award research contracts to the most competent bidder. Both the bidding process and final reports were to be peer-reviewed to assure quality and non-biased reporting. The GCMRC, the science management component of the AMP, is now operating much differently than established in the original guidelines set for this administrative component of the USGS. The science staff is very large and most programs are being done in-house with no independent peer-review.

Prior to the EIS the Glen Canyon Dam Environmental Studies program was seriously criticized by the National Research Council for this same failure to meet accepted methods to assure scientific credibility. An independent review of the current AMP science program would reveal a loss of integrity and standing when the GCMRC model was abandoned in favor of what currently exists today in the GCMRC.

At a time when the Grand Canyon is about to lose another native fish species, the AMP is cutting back on scientific work, seemingly at the request of the Western Area Power Administration, whose hydropower revenues are used to fund the science. The research for the 2000 Low, Summer Steady Flow (LSSF) represents one example of how the AMP science program has been affected. First, the experiment was fast tracked, with limited opportunity for outside input or competitive bidding for the monitoring. Pre-experiment flow data was not compiled and therefore the design of the experiment may not have been properly formulated. Scientists did not start collecting data on the river until after the first spike flow occurred. Although the design of the experiment was released for the competition, the one proposed by the contractor was not accepted. Also, this experimental flow was originally proposed to benefit native fish with relatively low, steady flows in accordance with the Biological Opinion, but the final experiment allowed for less than the recommended time.

The original EIS assumed that experimentation and recovery efforts would be achieved with firm attention paid to proper scientific protocol and management of public funds toward endangered species recovery in Grand Canyon National Park. This is not occurring. In fact the opposite is occurring. The AMP has enacted budget reductions and caps without supplemental funds to adequately maintain and preferably improve monitoring and research in Grand Canyon National Park. Finally, AMP is not providing adequate management leadership while the

USGS/GCMRC is not contributing credible independent data required by the mandates prescribed by the ROD, RPA and subsequent charters and guidelines. Together, these factors warrant immediate preparation of an SEIS.

6. Inability of the AMP decision-making process to address fundamental resource recovery requirements is limiting progress

The ROD called for the establishment of the AMP as a stakeholder group to advise the Secretary of the Interior on implementation of Grand Canyon programs. The application of the ROD is the sole responsibility of the AMP. The AMP has been, and continues to be, controlled by the water and energy groups, groups whose self-interest is to avoid long-term change from the status quo. These groups necessarily are not ultimately dedicate to the protection and recovery of the Colorado River and the native fish it should support.

While the make-up of the group has provided for a bias toward representing water and energy interests, it was anticipated that the program's mandate to mitigate downstream impacts of dam operations would ensure that sufficient attention would be given to the needs of the resource. This has not occurred, as exemplified by the failure to undertake RPA programs, the decline in humpback chub, the extirpation of the razorback sucker, continued loss of essential sediment, and accelerated degradation of archeological sites. A key reason for this continued program failure is that the AMP decision-making process continues to demonstrate a clear bias toward minimizing loss of hydropower. Also, the AMP evades recommendations that would create legal conflicts between the Organic Act, Endangered Species Act, NEPA and even GCPA. The workings, the make-up and the ineffectiveness of the AMP must be reevaluated in the SEIS.

Evidence to support prejudice for one resource over another recently occurred when the trout population suppression flows were modified in a fast-track manner without proper consultation or due process within the AMP. Moreover, the current Sunday flow regime has proved to be inadequate for true trout suppression and demonstrates the concerns over hydropower prejudice for efforts to conserve endangered species. There has also been a recent suggestion for a flow regime of 5,000 to 25,000 cfs for year 2005. These proposed flows, the environmental impacts of which have never been addressed, are outside the range prescribed for the conservation of natural and cultural resources by the ROD and the Biological Opinion.

Flow experiments, especially those designed to benefit humpback chub recruitment have been of limited duration, and as such generated inconclusive results. Results of the LSSF were inconclusive because data was neither collected prior to initiating the flows nor afterwards. In this particular experiment the flow was not timely, or sufficient enough for the food web to adjust and respond. The RPA recommended, "experimental flows will be conducted for a sufficient period of time to allow for experimental design, biological processes to function, and for variability inherent in riverine ecosystems to be expressed" (p. 36).

Overall, the AMP is failing to achieve GCPA goals because the ROD and subsequent program design do not allow for meaningful adjustments in key, aquatic ecosystem elements. The program continues to focus on treating the symptoms of ecosystem decline rather than what is actually causing the decline. In other words, the habitat is in dramatic decline and the AMP is doing nothing meaningful–is failing to make any hard choices–to bring the habitat closer to pre-dam conditions. These critical ecosystem elements are well documented and include:

A. Natural hydrograph that would redistribute sediment during the spring run-off and stimulate native fish spawning.

B. Natural thermograph with warmer summer water temperatures and colder winter temperatures.

C. Annual inputs of sediment, nutrients and woody debris to create generally turbid water conditions.

Again, these failures underscore the need to take a renewed look at a process that has not served the Colorado's native fish and has not followed the guidelines, recommendations and requirements set forth to achieve recovery of these species.

7. Our concerns for the First Nations

The AMP has not fully engaged the process that threatens their cultural and natural heritage in Grand Canyon. They have also been given a minimal amount of resources to monitor their cultural properties in Grand Canyon. This is a violation of the trust that was developed with the tribes during Glen Canyon Environmental Studies and is allowing the government to continue to minimize the value of these tribal resources.

8. Recommendations

Based on the above, the following steps are legally required as part of the effort to protect and restore native fish and their critical habitat to the Colorado River below Glen Canyon Dam.

A. The AMP must immediately recommend to the Secretary of Interior that preparation of a SEIS to assess the environmental impacts of the operation of Glen Canyon Dam begin within six months.

B. A SEIS could take several years and there are a number of interim actions the AMP must take, both in terms of science and in the operations, to help impede the further decline of natural and cultural resources in the Grand Canyon while we await a new ROD.

C. Because the SEIS could take several years the AMP must undertake interim actions within six months to help forestall the further decline of natural and cultural resources in the Grand Canyon until a new ROD is issued.

1. Reorganize the AMP to be proactive so that it is comprised of only the responsible agencies and sovereigns: BOR, NPS, USFWS, and the Tribes. (Participation by other stakeholders would be available through public process as explained below in #2.)

2. Require the AMP meet twice a year with a 30-day comment period prior to each meeting. This program would use interactive communication and video technology that was not available during the 1996 EIS process and would provide for more stakeholders to be heard.

3. Reorganize GCMRC to be an administrative organization outside of the DOI. This would remove or militate against agency bias and shortcomings, and be a positive step toward a truly independent science organization. Competition and protocol development should follow NPS guidelines for science activities within national parks.

D. Humpback Chub population and habitat monitoring

All reports and analyses by the AMP have focused on humpback chub numbers, and not the relative condition of the fish or health of the critical habitat. This must change. While some of this data has been collected, there has not yet been any ongoing analysis on the condition factors of the humpback as recommended by the USFWS. Additionally, factors relevant to habitat such as feeding habits, water quality, age class, genetics, and recruitment and migration patterns for all periods of the humpback chub's life span need to be documented. The new AMP must also determine the population level and changes in biological parameters that would trigger a cessation of handling humpback chub so as to avoid incidental take on the remaining population.

E. Follow the Biological Opinion for the Humpback Chub and the natural river hydrograph

As a baseline, all flow decisions should be evaluated by how well they mimic the natural hydrograph. So far, the AMP has ignored this fundamental principle of river ecology. Without it there will likely be no hope of establishing a second population for the humpback chub, or of restoring its critical habitat as called for in the RPA and required by law. AMP should continue intensive alien fish suppression at the Little Colorado River reach.

F. Expand the critical habitat throughout the Grand Canyon, including the tributary streams and the Glen Canyon reach.

G. Develop a scientifically sound monitoring program that extends current non-GCMRC programs through the SEIS process so continuity of ecosystem data sets is achieved. These data sets should be linked with water quality, lower and higher trophic levels, riparian vegetation and beach sand monitoring. GCMRC monitoring programs should be delegated to past or present contractors for one

year and then all contracts should be opened for competitive bidding under the new AMP and the SEIS. If these contractors do not want the work then the Grand Canyon Science Center will conduct the monitoring as protocols dictate.

H. Initiate a comprehensive, cultural site degradation abatement program throughout the entire river corridor in accordance with NPS standards.

G. Initiate development of a River Management Plan for the Little Colorado River as called for in the RPA.

In conclusion, the Grand Canyon is treasured by the citizens of the world and the natural values that make up this spectacular place must not be compromised any further. We urgently request serious and immediate action to address these matters. We look forward to receiving a detailed response to this letter explaining the steps you will take to further the goals of the Grand Canyon Protection Act, the Biological Opinion and RPA, NEPA, and the protection and recovery of the Colorado's endangered native fish and their critical habitat, as is required by law. Thank you in advance for your efforts to meet your statutory obligations.

Sincerely,

John Weisheit
Living Rivers Conservation Director
The Colorado Riverkeeper

American Whitewater
Arizona Wilderness Coalition
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