



November 3, 2023

Kathleen Callister
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Sent via email

RE: Notice of Intent to Prepare a Supplemental Environmental Impact Statement for the December 2016 Record of Decision Entitled Glen Canyon Dam Long-Term Experimental and Management Plan

Dear Ms. Callister,

The Grand Canyon Trust (“Trust”) submits this letter to provide scoping comments on the U.S. Bureau of Reclamation’s *Notice of Intent to Prepare a Supplemental Environmental Impact Statement for the December 2016 Record of Decision entitled Glen Canyon Dam Long-term Experimental and Management Plan* (“*Notice of Intent*”). Reclamation proposes to revise the 2016 Record of Decision for the Long-Term Experimental and Management Plan (“LTEMP Revision”) by analyzing: 1) options for modified releases from Glen Canyon Dam to prevent smallmouth bass and other nonnative fish from establishing in Marble and Grand Canyons, which would threaten the recovery of the native humpback chub; and 2) options for modifying the sediment accounting window set forth in the protocol for conducting high flow experiments in Marble and Grand Canyons under the LTEMP.¹ Reclamation request comments on “the scope of the specific operational guidelines, strategies, and any other issues that should be considered.”²

The Grand Canyon Trust is a 501(c)(3) non-profit advocacy organization founded in 1985 with a mission to safeguard the wonders of the Grand Canyon and the Colorado Plateau, while supporting the rights of its Native peoples. We are headquartered in Flagstaff, Arizona and have more than 3,000 members and supporters. For decades, we have worked across the four corners region to secure protections for important cultural landscapes, safeguard water from uranium mining pollution, defend the unsustainable withdrawal of groundwater for development, protect the Grand Canyon ecosystem, and restore healthy forests and springs. We appreciate the opportunity to comment on these proposals to modify operations at Glen Canyon Dam and to consider how they fit into the broader challenges facing the Colorado River Basin.

¹ 88 Fed. Reg. 68667 (October 4, 2023).

² *Id.*

At the outset, it is vital to emphasize the context in which this action is proposed. As the Notice of Intent indicates, the Colorado River Basin is in a “prolonged period of drought and low-runoff conditions,” the past two decades are “one of the driest periods in the last 1,200 years,” and water levels at Lake Powell have decreased significantly.³ In fact, water levels at lakes Powell and Mead have fallen by nearly 70 percent since 1999. The driver of the decline in these reservoirs is not climate change in isolation, but rather, a limited water supply being used at an unsustainable rate. The basin’s thirst for water—above what the Colorado River and its tributaries can provide—is at the heart of the many issues confronting the basin and the underlying impetus for the need for the proposed action. Thus, the solution to this challenge will be significantly influenced by the success of other efforts to balance supply and demand in the basin including the revision of the 2007 Interim Guidelines and the renegotiation of new Post-2026 Guidelines. Reclamation must ensure that the multiple efforts to revise policy in the Colorado River Basin are coordinated, integrated, and address the crisis in a holistic manner.

We appreciate Reclamation’s efforts to revisit the 2007 Interim Guidelines in the near-term (2023-2026) through release of its revised supplemental analysis and to begin the renegotiation process for the Post-2026 Guidelines. However, we are disappointed that the supplemental near-term analysis does not continue to analyze a broad range of alternatives that revise the 2007 guideline’s framework for assessing operations at Lakes Powell and Mead and yield additional identified cuts to lower basin water use. Despite the improved hydrology in 2023, the need to stabilize and recover reservoir storage in the short-term should still be an immediate priority in the basin. The actions proposed in the LTEMP Revision will be rendered futile if there is not enough water in Lake Powell to support the modified operations.

The Trust details its comments below:

1. Compliance with the Grand Canyon Protection Act of 1992 must guide any supplement to the Long-term Experimental and Management Plan.

It is curious that the Notice of Intent did not mention or cite the mandates of the Grand Canyon Protection Act⁴ (“GCPA”) as a source of authority, or as part of the purpose or need, for the proposed action. The Long-term Experimental and Management Plan was intended as a framework to adaptively manage Glen Canyon Dam operations and serve as a mechanism to facilitate other experimental actions to fulfill the mandate of the Act.⁵ In determining how to proceed to balance resources in the Grand Canyon, Reclamation must consider the letter and spirit of the GCPA in its analysis.

The Grand Canyon Protection Act of 1992 provides that:

The Secretary shall operate Glen Canyon Dam in accordance with the additional criteria and operating plans specified in section 1804 and exercise other authorities under existing law in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon

³ 88 Fed. Reg. at 68667.

⁴ Grand Canyon Protection Act of 1992, Pub. L. No. 102-575, 106 Stat. 4600 (1992).

⁵ DOI (U.S. Department of the Interior), 2016, *Record of Decision for the Glen Canyon Dam Long-Term Experimental and Management Plan Final Environmental Impact Statement*, December 2016 at 2. Available at https://ltempeis.anl.gov/documents/docs/ltemp_rod.pdf.

National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use.

Former Reclamation Commissioner and Deputy Secretary of the Interior, Michael Connor, described the Act⁶ as follows:

The GCPA is a congressional attempt to protect the natural and cultural environment downstream of Glen Canyon by defining the priorities under which DOI must operate the dam. The law of the river is still paramount in dictating releases, but now the protection of downstream resources takes priority over all other values. In fact, the legislative history indicates that the GCPA specifically rejects the notion that power generation has any priority over protection of downstream environmental, recreational, or cultural values. This reordering of priorities, recognizing traditionally overlooked values, is by itself enough to make the GCPA a significant piece of legislation.

Further, the goal of the GCPA goes beyond protecting downstream resources and specifically contemplates “improv[ing] the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established.”⁷ Reclamation has authority under the Grand Canyon Protection Act that “gives priority to protection of the Grand Canyon, and all other values must operate within this mandate.”⁸ We request that Reclamation consider and prioritize the GCPA mandates in this decision making process.

2. The purpose and need of the LTEMP Revision are too narrow to justify changes to the protocol for high flow experiments.

The purpose and need for the LTEMP Revision should be broad enough to incorporate the dual objectives to 1) modify flow operations to prevent the establishment of smallmouth bass and 2) update the high flow experiment protocol to reflect the latest scientific information and need to alter the sediment accounting windows. The Notice of Intent, however, states the purpose and need of the LTEMP Revision are to “analyze additional flow options at Glen Canyon Dam in response to invasive smallmouth bass and other warmwater nonnatives recently detected directly below the dam” and “prevent the establishment of smallmouth bass below Glen Canyon Dam (by preventing additional spawning), which could threaten core populations of threatened humpback chub in and around the Little Colorado River and its confluence with the Colorado River mainstem.”⁹ The purpose and need is too narrow to justify changes to the high flow experiment protocol.

Given that this proposed action is a LTEMP Revision, it might be helpful to reframe the purpose and need for the original action. The purpose of the Long-term Experimental and Management Plan is to provide a framework for adaptively managing Glen Canyon Dam in a manner consistent with the GCPA and other applicable laws.¹⁰ The plan sets forth specific dam operations, non-flow actions, and

⁶ Connor, Michael. June 1994. Extracting the Monkey Wrench from Glen Canyon Dam: The Grand Canyon Protection Act – An Attempt at Balance. 15 *Pub. Land L. Rev.* at 152. Available at <https://scholarworks.umt.edu/cgi/viewcontent.cgi?article=1313&context=plrlr>.

⁷ *Id.* at 154.

⁸ *Id.* at 137.

⁹ 88 Fed. Reg. at 68668.

¹⁰ DOI (2016) at 3.

other experiments designed to minimize impacts to and improve cultural and environmental resources in Glen Canyon Recreation Area and Grand Canyon National Park.¹¹ The need for the plan stemmed from a desire to use decades of scientific information to inform decisions so that the Secretary of the Interior can meet her obligations to protect downstream resources, conserve listed species under the Endangered Species Act, and avoid or mitigate impacts on National Register of Historic Places-eligible properties, while meeting water deliveries and generating power.¹²

Reclamation's singular and narrow description of the purpose and need may foreclose available solutions. The purpose of the LTEMP Revision is to analyze dam operations and update experimental protocols for the purpose of protecting, mitigating harm to, and improving downstream environmental and cultural resources. The need for the action is to ensure the survival and recovery of the threatened humpback chub in the Grand Canyon, prevent establishment of smallmouth bass below the dam, and ensure that experimental protocol to address sediment resources reflect updated and best available science. This broader purpose and need better reflects the pair of objectives trying to be addressed.

Another alternative scope of this analysis would include broadening the LTEMP Revision to include the anticipated and likely inevitable update of the monthly release volumes set out in Table 1 on page 3 of the LTEMP Record of Decision. The original revision to the 2007 Interim Guidelines proposed in the Draft Supplemental Environmental Impact Statement released in April 2023 suggested releasing less than 7 million acre-feet annually from Glen Canyon Dam to protect reservoir elevations at Lake Powell under certain scenarios. The monthly water distribution table developed in LTEMP does not contemplate what monthly releases would look like below that level. The LTEMP stakeholders have an interest in ensuring that these tables are updated with their input and that the LTEMP resources are protected especially during these lower flow conditions. These flow distributions are vital to the assessment of the affected environment in any subsequent NEPA processes that revise or update the 2007 Interim Guidelines. Given the urgency to develop additional tools to protect humpback chub and prevent nonnative fish from establishing in the canyons in the short-term, we recommend proceeding with the dual purpose LTEMP Revision as discussed above. However, Reclamation should prioritize a broader revision as soon as the LTEMP Revision is finalized and ensure that the monthly release volume table revisions occur parallel to and help inform the effects analysis for the post-2026 guidelines.

3. *Recovering reservoir storage through demand reductions is key to meeting the dual purposes of the LTEMP Revision.*

To address the nonnative species threatening humpback chub in Marble and Grand Canyons, higher reservoir elevations at Lake Powell would reduce the opportunity for nonnative fish passage through Glen Canyon Dam, allow colder water into the Colorado River below, and create opportunities to modify flows through Marble and Grand Canyons to protect and improve cultural and environmental resources as mandated by the GCPA. Similarly, high flow experiments are more likely to be conducted when Lake Powell reservoir elevations are not near critical levels. As reservoir levels dwindle, not only do conflicts among resources increase, but the options for addressing issues become much more difficult, if not impossible. We encourage Reclamation to take preemptive actions now—both in the context of stabilizing reservoir storage and preventing the establishment of nonnative species below Glen Canyon Dam—to prevent even more difficult and expensive solutions later.

¹¹ *Id.*

¹² *Id.*

Bruckerhoff et al. (2022) studied environmental metrics below Glen Canyon Dam to compare “the outcome of combinations of water storage scenarios and consumptive use limits” based on continuation of conditions under the Millennial Drought.¹³ The authors found that where water is stored “was less important when less water was available, highlighting the importance of keeping water in the system to provide flexibility for achieving ecosystem goals.”¹⁴ This finding seems particularly relevant to the proposed action given that the environmental metrics were similar to the concerns being addressed in the LTEMP Revision. The study concluded the only way to avoid the consequences of low reservoir levels (e.g. inability to perform modified flows, warm river temperatures, and change to fish communities) “is by significantly reducing consumptive water use in the entire basin so that there is more water stored in Lake Powell and Lake Mead.” Thus, “limiting consumptive use may provide the most flexibility in managing ecosystem drivers.”¹⁵

4. High flow experiments are critical to protect, mitigate adverse impacts to, and improve the transport and accumulation of sediment in Marble and Grand Canyons.

In January of 2023, Glen Canyon Monitoring and Research Center (“GCMRC”) scientists sounded the alarm regarding the downward spiral of sediment resources in the Colorado River in Marble and Grand Canyons.¹⁶ At least 28 million metric tons of sand has eroded since the dam was closed in 1963 and about half of that eroded in the late 1990s, including six metric tons from each Marble and Grand Canyons.¹⁷ Further, sandbar monitoring indicates that 67 percent of sites in Marble Canyon had less high-elevation sand in 2022 than in June of 1990; that percentage was 11 percent for Grand Canyon sites.¹⁸ These scientists urged the Adaptive Management Work Group representatives to help reverse this negative trend by implementing a series of high flow experiments (HFEs) as required by LTEMP. Until this spring (April 2023), the only HFE implemented since LTEMP was finalized was in the fall of 2018. This is very concerning given the mandate in the Grand Canyon Protection Act to operate the dam in a manner “to protect, mitigate adverse impacts to and improve the values for which the Grand Canyon National Park and Glen Canyon National Recreation Area” were established. HFEs are the only mechanism for transporting sediment inputs from tributaries throughout Marble and Grand Canyons and are the sole source of mitigation to address the adverse impacts to sediment resources since the construction of Glen Canyon Dam.

¹³ Bruckerhoff, L.A., Wheeler, K., Dibble, K.L., Mihalevich, B.A., Neilson, B.T., Wang, J., Yackulic, C., and Schmidt, J.C. 2022. Water Storage Decisions and Consumptive Use May Constrain Ecosystem Management under Severe Sustained Drought, *Journal of the American Water Resource Association* 58 (5): 654-72. Available at <https://doi.org/10.1111/1752-1688.13020>.

¹⁴ *Id.* at 1.

¹⁵ *Id.* at 16.

¹⁶ USGS (U.S. Geological Survey’s), 2023, Evaluation of High-Flow Experiments during Aridification AMWG Reporting Meeting Presentation dated January 25, 2023. Available at <https://www.usbr.gov/uc/progact/amp/twg/2023-01-26-twg-meeting/20230126-AnnualReportingMeeting-OverviewEvaluationHigh-FlowExperimentsDuringAridification-508-UCRO.pdf>.

¹⁷ Topping, D. J., Grams, P.E., Griffiths, R.E., Dean, D.J., Wright, S.A., & Unema, J.A. (2021). Self-limitation of sand storage in a bedrock-canyon river arising from the interaction of flow and grain size. *Journal of Geophysical Research: Earth Surface*, 126, e2020JF005565. <https://doi.org/10.1029/2020JF005565>

¹⁸ See GCMRC, Project An Update and Evaluation of LTEMP Sand Management, January 25, 2023 AMWG Reporting Meeting Presentation.

The GCMRC scientists recommended revising the sediment accounting window in the HFE protocol to run annually starting and ending on July 1 of each year.¹⁹ Adapting the HFE protocol to address the issues arising due to “low water conditions” helps to address the sediment issue and ensures better compliance with the Grand Canyon Protection Act. This proposed change to the sediment accounting window would reduce the total number of HFEs possible for the remainder of the LTEMP 20-year period, but it could also ensure that HFEs are conducted more regularly to produce positive outcomes for sediment resources. The LTEMP HFE protocol appears to authorize (if sediment trigger is reached during the accounting window) 38 HFEs over the 20-year period, but based on the modeling analysis, LTEMP anticipated 15 fall HFEs and an additional 5 to 7 spring HFEs (a total of 22 HFEs) during the 20-year period.²⁰ To date, only one fall HFE in 2018 and one spring HFE in 2023 were implemented during the LTEMP period, which leaves 15 fall HFEs and 5 to 6 additional spring HFEs through 2036 under the current protocol. With the proposed modification to the sediment accounting window, the maximum number of sediment-triggered HFEs for the remainder of the LTEMP period would be one per year or 13. A regular cadence of high flow experiments in years where sediment is available will ensure sediment transport occurs regularly to protect cultural, environmental, and recreational resources in the canyons. The Trust is supportive of modifying the sediment accounting window and strongly encourages Reclamation to move forward with analyzing and approving this portion of the proposed action.

5. *Releasing water through bypass tubes has an important dual purpose to control smallmouth bass.*

Reclamation has been aware of the need to prevent passage of nonnative species through Glen Canyon Dam at least since the Record of Decision for the LTEMP was finalized in 2016 (six years ago) and likely long before. In fact, the Biological Opinion for the LTEMP ROD specifically contemplates temperatures to be warmer under lower reservoir elevations and that options to “minimize or eliminate passage through the turbines or bypass intakes” and to “hinder expansion of warmwater nonnative fishes” were warranted at that time.²¹ Further, the importance of “regulation and control of nonnative fish” has been a “management action identified in the humpback chub and razorback sucker recovery goals since 2002.”²² Reclamation, however, only acted after smallmouth bass were found reproducing in Marble Canyon in 2022.

All of the proposed modified flow actions introduced by Reclamation as part of the LTEMP Revision rely on releases from the bypass tubes in Glen Canyon Dam to lower temperatures in the Colorado River to create inhospitable conditions for smallmouth bass spawning. However, the other important purpose is that bypass releases are also critical to avoiding additional smallmouth bass passing through the dam. Therefore, until Reclamation can construct a barrier to downstream passage of nonnative fish through the dam, measures should be taken, not just to thwart spawning of smallmouth bass already in Marble and Grand Canyons, but also to prevent as few nonnative fish as possible pass through the dam.

¹⁹ See USGS (2023), above.

²⁰ *Id.*

²¹ See DOI (2016), above at E-12.

²² *Id.*

6. *The Endangered Species Act requires Reclamation to ensure the survival and recovery of humpback chub in the Grand Canyon.*

Reclamation is required to ensure that its management actions are not causing jeopardy to listed species under the Endangered Species Act. The 2016 LTEMP Biological Opinion²³ details conservation measures established to prevent jeopardy and help ensure the survival and recovery of the threatened humpback chub. The danger to humpback chub from nonnative species was clear in 2016 and several significant measures were included to ensure Reclamation took steps to protect the humpback chub from these threats. The conservation measures set out in the 2016 Biological Opinion include:

explore the efficacy of a temperature control device at the dam to respond to potential extremes in hydrological conditions due to climate conditions that could result in nonnative fish establishment;

pursue means of preventing the passage of deleterious invasive nonnative fish through Glen Canyon Dam;

planning and compliance to alter the backwater slough at River Mile (RM) 12 (commonly referred to as “Upper Slough”), making it unsuitable or inaccessible to warmwater nonnative species that can compete with and predate upon native fish, including humpback chub; and

planning and compliance of a plan for implementing rapid response control efforts for newly establishing or existing deleterious invasive nonnative species within and contiguous to the action area.²⁴

“These conservation measures are designed to minimize or reduce the effects of the proposed action or benefit or improve the status of listed species as part of the LTEMP.”²⁵ It is clear from the 2016 Biological Opinion that a need already existed to take actions around nonnative warmwater fish and that it “may become a more frequent need ... with lower reservoir elevations and warmer dam releases.”²⁶ Given the discovery of nonnative fish below the dam and evidence of spawning, Reclamation must reconsult with the U.S. Fish and Wildlife Service to determine what measures are needed, including or in addition to those proposed as part of the LTEMP Revision, to ensure continued survival and recovery of humpback chub in Grand Canyon.

7. *Reclamation must prioritize consultation with the Grand Canyon affiliated Tribes and ensure that the LTEMP Revision honors and values their concerns around taking life in the canyon.*

The Pueblo of Zuni, the Hopi Tribe, and other tribes have expressed significant ongoing concerns regarding taking of life in the Marble and Grand Canyons. Specifically, the tribes oppose many, if not

²³ U.S. Fish and Wildlife Service, 2016, *Final Biological Opinion for the Glen Canyon Dam Long-Term Experimental and Management Plan*, U.S. Fish and Wildlife Service, Arizona Ecological Services Office, Phoenix, Ariz., Executive Summary E-II to E-I2, E-69. Available at <https://www.usbr.gov/uc/DocLibrary/Reports/LTEMPReports/20230628-LTEMPBiologicalOpinion-ProgressReportComplianceConservationMeasuresFY2022-508-UCRO.pdf>.

²⁴ *Id.* at E-II-E-I2.

²⁵ *Id.* at E-69.

²⁶ *Id.* at E-I2.

all, of the measures proposed by Reclamation to prevent the establishment of smallmouth bass in the Colorado River downstream of Glen Canyon Dam. Given these concerns, we strongly encourage Reclamation and other partners to prioritize and elevate consultation with the Grand Canyon affiliated Tribes to understand their interests, consider alternate solutions that do not conflict with their culture and values, and do so in a way that allows adequate time and engagement to ensure meaningful consultation and to influence outcomes. This consultation should be ongoing, not just during the LTEMP Revision process, including during planning, design and implementation of actions related to preventing establishment of nonnative fish in the Grand Canyon, and should include travel to respective reservations to reduce barrier to conversation and consultation. Further, preventative methods—such as creating a barrier in Lake Powell to ensure non-native species do not pass through the dam—have long been advised as an action Reclamation could take that may not conflict with values of and cause harm to tribes and Native communities. We strongly recommend that these proactive solutions be expedited and prioritized to carry out the agency’s trust responsibility to the tribes and Native communities with ties to the Colorado River and its canyons.

The Trust appreciates the opportunity to comment on scoping for the LTEMP Revision. We support the need for urgent action to prevent the establishment of smallmouth bass in Marble and Grand Canyons and hope this process will resolve any concerns raised in the comments to the Glen Canyon Dam/Smallmouth Bass Flow Options released on February 24, 2023. This effort to develop dam operations to prevent establishment of nonnative species, as well as revising the trigger for high flow experiments, is necessary to protect native fish as well as fulfill the mandates under the Grand Canyon Protection Act to enhance archaeological and cultural resources, natural processes, tribal values and resources, sediment transport and sandbar building, riparian vegetation, and recreational experiences as designated in LTEMP. We look forward to working with you to integrate this solution with the larger challenge of sustainable management of the Colorado River Basin.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jen Pelz', with a long horizontal flourish extending to the right.

Jen Pelz
Water Advocacy Director
Grand Canyon Trust