GRAND CANYON TRUST

2601 N Fort Valley Road Flagstaff, AZ 86001 928-774-7488 grandcanyontrust.org

March 22, 2024

Kathleen Callister
Adaptive Management Division Manager
U.S. Bureau of Reclamation
125 South State Street, Suite 800
Salt Lake City, UT 84138
LTEMPSEIS@usbr.gov

Sent via email

RE: Draft Supplemental Environmental Impact Statement for the Glen Canyon Dam Long-Term Experimental and Management Plan dated February 2024

Dear Ms. Callister,

The Grand Canyon Trust ("Trust") submits this letter to provide comments on the U.S. Bureau of Reclamation's *Draft Supplemental Environmental Impact Statement for the Glen Canyon Dam Long-Term Experimental and Management Plan ("Draft SEIS")*. Reclamation analyzes revising the 2016 Record of Decision for the Long-Term Experimental and Management Plan[1] ("2016 ROD") to 1) modify releases from Glen Canyon Dam to prevent smallmouth bass and other nonnative fish from establishing in Marble and Grand Canyons, which threaten the recovery of native humpback chub; and 2) modify the sediment accounting window set forth in the protocol for conducting high flow experiments in Marble and Grand Canyons under the Long-Term Experimental and Management Plan ("LTEMP").

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.

This Draft SEIS comes on the heels of Reclamation's separate process to revise existing operational guidelines and obtain additional water conservation from the basin states in the near-term (2023-2026) to protect dam infrastructure, "stabilize the decline in reservoir

[1] U.S. Department of the Interior, *Record of Decision for the Glen Canyon Dam Long-Term Experimental and Management Plan Final EIS* dated December 2016. Available at: https://ltempeis.anl.gov/documents/docs/LTEMP_ROD.pdf.

storage," and avert "system collapse" due to free falling reservoir elevations at Lakes Powell and Mead through 2022.[2] Earlier this month, Reclamation released its *Final Supplemental Environmental Impact Statement for Near-Term Colorado River Operations* ("Final Near-Term SEIS"), which adopted the Lower Basin's plan to conserve an additional 3-million acre-feet over three years and granted Reclamation authority to reduce releases from Glen Canyon Dam to 6-million acre-feet as needed to protect elevations in Lake Powell at 3,500 feet above sea level.[3] We commend this effort by Reclamation, the basin states, tribes, and others to reduce the risk of system collapse; however, the failure of that process to integrate and consider challenges to other environmental, biological, and cultural resources—especially those in Marble and Grand Canyons—and the water savings needed to also address those concerns[4] is a missed opportunity and falls short of meeting the agency's responsibilities under the Grand Canyon Protection Act of 1992[5] and the Endangered Species Act.[6]

Reservoir elevations at Lake Powell are the cause of and the solution to addressing the problems this Draft SEIS seeks to tackle including warmer water releases, passage of nonnative fish through the dam, establishment of nonnative species in Marble and Grand Canyons that will harm endangered and threatened native fish, and erosion of sandbars and beaches impacting environmental, cultural, and recreational resources below Glen Canyon Dam. While the flow options considered here may serve as a short-term solution to prevent smallmouth bass from establishing and causing harm to humpback chub and other native fish below the dam, the long-term and more sustainable solution requires balancing supply and demand in the basin—not just to prevent system failure and ensure continued water deliveries and power production—but to ensure that cultural, environmental, and recreational resources are protected and that native species that once thrived in the waters of the Colorado River—like humpback chub—persist long-term.

It is with frustration that we find ourselves in a position that requires us to make a choice to endorse flow options, against the strong wishes of tribal communities expressed for many decades to respect and not take life in Marble and Grand Canyons, or decide between protecting, sustaining, or sacrificing resources like river flows, native fish, archaeological sites, recreational fishing and boating, hydropower, among others. It is important to consider here that these forced difficult choices remain because another difficult task—to live within

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[2] U.S. Bureau of Reclamation, *Final Supplemental Environmental Impact Statement for Near-Term Colorado River Operations* dated March 2024 at 1-8. Available at: https://www.usbr.gov/ColoradoRiverBasin/documents/NearTermColoradoRiverOperations/20240300-Near-termColoradoRiverOperations-FinalSEIS-508.pdf.

[3] *Id*. at 2-8 and 2-10.

[4] The amount of water conservation adopted in the Final Near-Term SEIS for the 2023-2026 period was 2 to 3 times less than proposals offered by the 6-basin states (1.7 to 3.4 million acre-feet per year) and California (1.2 to 3.3 million acre-feet per year) that were made before the windfall snowmelt runoff during the 2023 water year. For a more detailed analysis of the Final Near-Term SEIS, see *Grand Canyon Trust's Comments on Reclamation's Draft Supplemental Environmental Impact Statement for Near-Term Colorado River Operations dated October 2023*. Available at: https://www.usbr.gov/ColoradoRiverBasin/documents/NearTermColoradoRiverOperations/PublicComments/Organizations/288_Grand%20Canyon%20Trust_508.pdf.

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

[6] Endangered Species Act, Pub. L. No. 93-205, 87 Stat. 884, 16 U.S.C. §§1531-1544 (1973).

the means of the Colorado River—continues to be pushed aside to uphold century old promises to more water than exists in the watershed today. Further, those original promises were made in the absence of basin tribes and without consideration for the sustainability of the Colorado River and its tributaries, the health of river ecosystems, and the challenges a warming climate would have on the water supply in the basin. Ultimately, these promises can no longer be kept, and doing so will only deprive those not at the table a century ago, tribes and the environment, from receiving water to sustain their communities and the landscapes, ecosystems, and natural wonders we all hold dear.

The Trust is supportive of Reclamation implementing the suite of cold-water alternatives analyzed in the Draft SEIS and updating the sediment accounting protocol for high flow experiments. We strongly encourage Reclamation to time flow spikes with high flow experiments where possible to create dual benefits for sediment resources in the canyons and to prevent spawning and establishment of nonnative fish. We fear that if Reclamation does not take immediate action—by implementing the most effective of the cold-water flow options based on the science (e.g. Cool Mix and Cool Mix with Flow Spike)—that smallmouth bass and other nonnative fish will become established in Grand Canyon. Such establishment will lead to harm to native fish including the largest and most stable population of humpback chub in the basin and result in even more consistent lethal management of nonnatives fish in the Grand Canyon, which will have direct, indirect, and cumulative effects on tribal values.[7] The Draft SEIS specifies that "[t]he Zuni, in particular, have linked fish mortality in the Canyons with adverse physical, mental, and psychological effects within the Zuni Pueblo. Consequently, additional mortality would have negative cumulative effect on the Zuni."[8] We hope that Reclamation whenever possible will move forward with the least intrusive means (one that does not take life in the canyon) to prevent establishment of smallmouth bass and other nonnative fish, for example, focusing on utilizing the cool mix options (or other options preferred by Zuni, Hopi, Navajo, and other tribes) whenever possible.

We also expect Reclamation to swiftly take other measures such as designing and implementing a fish barrier in Lake Powell to prevent additional nonnative fish passage through the dam and evaluating a temperature control structure or other infrastructure changes that could allow colder water to be passed through the dam. Ultimately, we expect Reclamation, the basin states, tribes, and other stakeholders to thoughtfully craft post-2026 guidelines that incorporate these and other goals that protect cultural and environmental resources in the Grand Canyon and conserve water at a level and design storage in a way that meets the spirit and mandates of the Grand Canyon Protection Act and Endangered Species Act.

The Trust details its comments below:

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[7] *See* Hopi Tribe Comments on *Framework to Prevent Invasive Fish Species Establishment Below Glen Canyon Dam* dated February 22, 2023 at 2, stating that "[t]he interrupting of life process through a process leading to death is not an acceptable method for Hopi. If something like a flow event would match a natural event in a natural time this is something that can be discussed with Hopi as an option before Hopi elders and its Cultural Advisory Task Team." Hopi comments 2-22-23 p1

[8] Draft SEIS at 3-179.

I. Reclamation should take immediate action to finalize the Draft SEIS and issue a record of decision so the cold-water alternatives can be implemented in summer 2024.

We appreciate Reclamation's recognition that the timing of this Draft SEIS is key.[9] The need to operate Glen Canyon Dam to reduce water temperatures and/or conduct flow spikes as soon as summer 2024 cannot be understated. The inability to implement such flows in 2023 only set back efforts to curb population growth and expansion of smallmouth bass populations below Glen Canyon Dam (three times more smallmouth bass were captured in 2023 than in 2022). The U.S. Fish and Wildlife Service emphasized that "the establishment of warmwater invasive fish, including smallmouth bass, below [Glen Canyon Dam] represents the greatest current potential threat to the continued survival and recovery of humpback chub in the Lower Colorado River basin."[10] Similarly, the Arizona Department of Fish and Game "stress[ed] the importance of preventative measures in the management of high-risk warmwater non-native fish through temperature control" and commented that they support the proposed flow options "and believe that they serve as viable options to contribute to efforts designed to reduce the risk of establishment of Smallmouth Bass."[11]

Smallmouth bass populations below Glen Canyon Dam have increased significantly over the past two years and their distribution has expanded.[12] "Prior to 2022, there are records of 22 individuals being caught between Glen Canyon Dam and Pearce Ferry."[13] These mostly large adult or subadult fish were more highly concentrated above Lees Ferry (12 captures) and at the inflow into Lake Mead (7 captures), only a few were found near the confluence of the Little Colorado River (3 captures).[14] These fish likely originated from passage through the dam at low elevations or past Pearce Ferry rapid above Lake Mead, but release temperatures from the dam were likely too cold for reproduction.[15] However, "[s]tarting in 2022, many of the bass are smaller, indicating that these fish have been produced locally, probably in and around the -12-mile slough" in Marble Canyon.[16] In 2022, 361 smallmouth bass were captured and that number increased three-fold to 1,073 smallmouth bass captured in 2023.[17] These smallmouth bass were distributed more uniformly and consistently throughout the Colorado

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[9] Draft SEIS at 1-8.

[10] U.S. Fish and Wildlife Service, *Scoping Comments on the Notice of Intent to Prepare a SEIS for Glen Canyon Dam LTEMP Revisions* dated November 3, 2023 (USFWS 2023) at 2. Available at: https://www.usbr.gov/uc/DocLibrary/EnvironmentalImpactStatements/GlenCanyonDamLong-TermExperimentalManagementPlan/LTEMP-SEIS-ScopingComments/008_USFWS_508.pdf.

[11] Arizona Department of Fish and Game, *Comments on draft Glen Canyon Dam/Smallmouth Bass Flow Options Environmental Assessment* dated March 10, 2023 at 2. Available in Reclamation's Public Comment Report at: https://www.usbr.gov/uc/DocLibrary/EnvironmentalAssessments/GlenCanyonDamSmallmouthBassFlowOptions/20230500-GlenCanyonDamSmallmouthBassFlowOptions-DraftEA-PublicCommentAnalysisReport-508-UCRO.pdf

[12] Draft SEIS at 3-67.

[13] *Id.* at 3-66.

[14] Figure 3-24, Draft SEIS at 3-67.

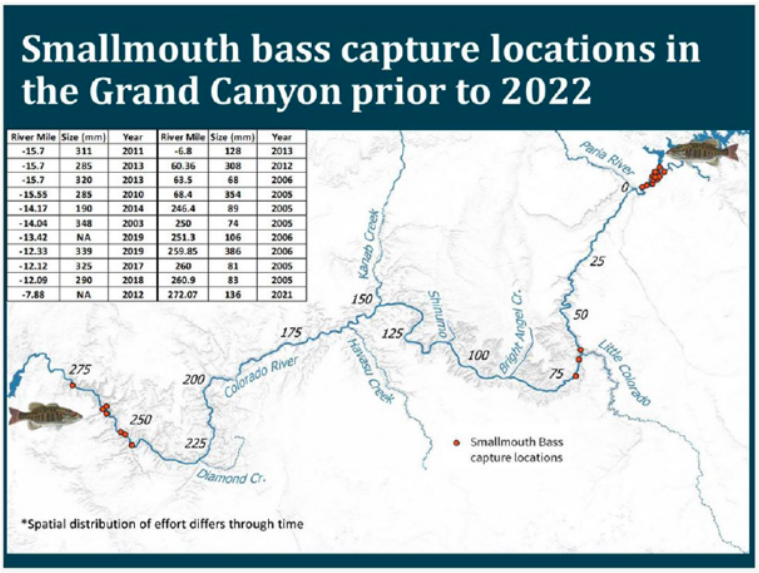
[15] *Id.* at 3-68; Attachment E, 2016 LTEMP ROD, *U.S. Fish and Wildlife Service Biological Opinion for the Glen Canyon Dam Long-Term Experimental and Management Plan* at E-68.

[16] Draft SEIS at 3-68.

[17] Figure 3-24, Draft SEIS at 3-67.

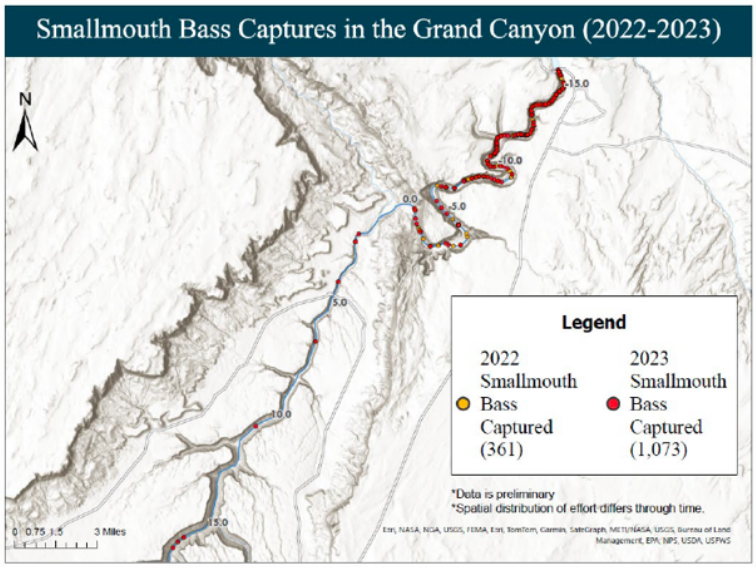
River below Glen Canyon Dam, but are still mostly heavily concentrated in Marble Canyon above Lees Ferry, as shown in Figure 3-24 from the Draft SEIS, reproduced below:

Figure 3-24
Smallmouth Bass Capture Locations in the Grand Canyon prior to 2022 and 2022-2023



River Mile	Size (mm)	Year	River Mile	Size (mm)	Year
-15.7	311	2011	-6.8	128	2013
-15.7	285	2013	60.36	308	2012
-15.7	320	2013	63.5	68	2006
-15.55	285	2010	68.4	354	2005
-14.17	190	2014	246.4	89	2005
-14.04	348	2003	250	74	2005
-13.42	NA	2019	251.3	106	2006
-12.33	339	2019	259.85	386	2006
-12.12	325	2017	260	81	2005
-12.09	290	2018	260.9	83	2005
-7.88	NA	2012	272.07	136	2021

Source: GCMRC 2014



Source: Reclamation GIS 2024

Further, preliminary modeling of potential smallmouth bass population growth (lambda) in 2024 based on water temperature predicted that taking no action led to population growth in 3% of traces at the confluence of the Little Colorado River (River Mile 61) based on the 30 hydrologic traces analyzed.[18] The population growth results were similar for the non-bypass

[18] Draft SEIS at 3-85 and Figure 1, Appendix A.

alternative.[19] It should be noted that these percentages may be a little misleading in that these are estimates for the entire year. As shown in Figure 3-35[20], water temperatures of Glen Canyon Dam releases are not predicted to reach anywhere near the temperature threshold of 15.5°C for about half the year (December through April), and the median release temperatures do not reach this threshold until late summer August to November. Thus, it would be helpful for Reclamation to revisit this analysis to separate out the population growth by month, week, or day (e.g. the % of traces in July that showed population growth of lambda greater than 1), based on how many times the 15.5°C threshold is reached and for how long it continues. This would help assess the efficacy of the flow options and provide more granular picture of what operations under these alternatives might look like in a given summer. Since we do not have access to that analysis, we use the existing preliminary modeling as evidence to inform this analysis.

The population growth predicted in 2024 would be on top of that seen in 2022 and 2023 and in a location—at the Little Colorado confluence—where a significant population of native humpback chub reside and would have increasing interactions with smallmouth bass.[21] The Draft SEIS[22] warns that

> Smallmouth bass are a major concern in the Upper Basin and are considered a contributing factor to the low abundance of native fish. If under the No Action Alternative smallmouth bass and other invasive fish (for example, green sunfish, walleye, and striped bass) become established in the Lower Colorado River despite other management actions to prevent further distribution (for example, mechanical removal), the No Action Alternative could detrimentally affect native species.

Further, the cold-water flow options become more difficult and less effective to implement at target locations farther away from Glen Canyon Dam. As nonnative fish populations become established in the Little Colorado River confluence (River Mile 61), the amount and temperature of water required to cool the river this far downstream becomes incredibly challenging because of the miles of warming of those releases that occur between the dam and the target location. Acting now is important to addressing this serious problem for humpback chub and other native fish.

The continued reproduction, distribution, and establishment of smallmouth bass in Marble and Grand Canyons will continue exponentially along the invasion curve unless and until Reclamation takes immediate and decisive action to operate the most effective cold-water alternative(s) contemplated in the Draft SEIS to cool the river and prevent additional spawning of smallmouth bass. We do not have time to wait, take no action, or try actions like the non-bypass alternative at this juncture. We appreciate Reclamation's efforts to move swiftly through this process under the National Environmental Policy Act and hope that the agency can issue a Record of Decision before summer of 2024. The Trust strongly

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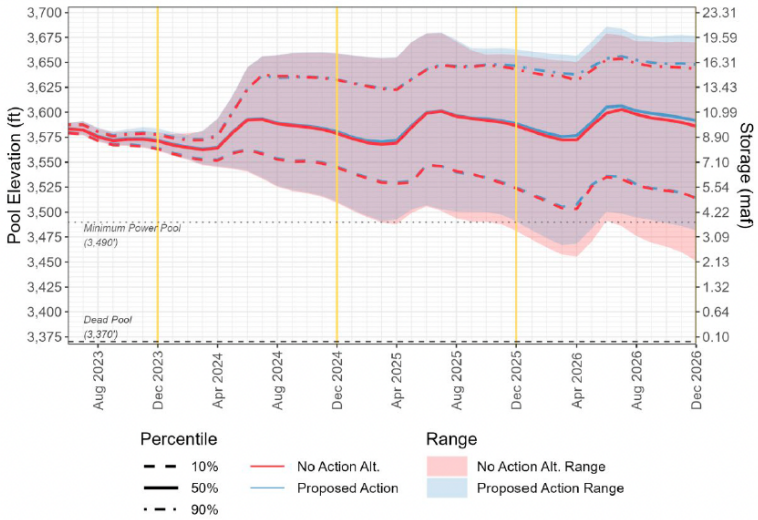
[19] *Id.*
[20] Draft SEIS at 3-157.
[21] *Id.* at 3-85.
[22] *Id.*

recommends Reclamation take immediate action using the most effective means possible (e.g. implementation of the Cool Mix or Cool Mix with Flow Spike alternatives) based on its research and modeling to ensure that additional population growth and distribution of smallmouth bass does not occur in Marble and Grand Canyons in 2024 and beyond.

II. Reclamation should move forward with the suite of cold-water alternatives to prevent establishment of smallmouth bass in Marble and Grand Canyons.

Given the current and projected reservoir elevation(s) at Lake Powell from 2024-2027 and the modest amount of water savings secured in the Final Near-Term SEIS, the cold-water flow options (Cool Mix, Cool Mix with Flow Spike, Cold Shock, and Cold Shock with Flow Spike) appear to be the best and most effective short-term option for preventing the establishment of smallmouth bass in Marble and Grand Canyons. Figure 3-5 from the Final Near-Term SEIS[23], reproduced below, shows in purple the projected end-of-month reservoir elevations at Lake Powell through the end of 2026 based on the selected alternative. While the current reservoir elevation (3,560 feet) presents a lower risk of passing additional nonnative fish through the dam and warmer water releases than elevations reached in 2022 and 2023 (3,520 feet), Lake Powell's elevation is still only 32% of capacity and is projected at the lower end of forecasts to fall in 2025 toward critical elevations and may fall below or hover around 3,500 feet for an extended part of 2026.

Figure 3-5
Lake Powell End-of-Month Pool Elevations



If Lake Powell reservoir elevations again decline, which is very likely, it will mean 1) more and ongoing nonnative fish passage through the dam as the warmer reservoir layer with nonnative fish approaches the penstocks, 2) warmer dam releases and increased water temperature in the Colorado River below, 3) the creation of favorable conditions for

[23] Final Near-Term SEIS at 3-29.

nonnative fish spawning and establishment below the dam and further downstream, 4) the cold-water flow options will be harder to achieve target temperatures, and 5) more cold water bypass will likely be required in an effort to reverse those conditions (especially at downstream locations like the Little Colorado River and Diamond Creek) to prevent spawning of nonnative fish. Taking no action or implementing the non-bypass alternative will only increase the already unacceptable risk of additional reproduction and distribution of smallmouth bass in Marble and Grand Canyons.

Preliminary modeling[24] shows that the Cool Mix and Cool Mix with Flow Spikes followed by the Cold Shock and Cold Shock with Flow Spikes appear to be the most effective options we have for decreasing river water temperatures and preventing spawning of smallmouth bass.[25] Figure 1 in Appendix A[26] shows the percentage of 30 modeled traces that showed population growth for the no action, four cold-water, and no bypass alternatives; data from that figure is reproduced as the Trust's **Table 1**, below:

Table 1. Forecast of Potential Annual Smallmouth Bass Population Growth Rate[27]

Alternative	River Mile	Percent of traces showing population growth (lambda >1)			
		2024	2025	2026	2027
No Action	RM 15 (Lees Ferry)	0%	7%	10%	17%
	RM 61 (LCR)	3%	10%	17%	17%
Cool Mix and Cool Mix with Flow Spikes	RM 15 (Lees Ferry)	0%	0%	0%	0%
	RM 61 (LCR)	0%	0%	0%	0%
Cold Shock and Cold Shock with Flow Spikes	RM 15 (Lees Ferry)	0%	0%	3%	3%
	RM 61 (LCR)	0%	3%	7%	10%
Non-Bypass	RM 15 (Lees Ferry)	0%	7%	10%	17%
	RM 61 (LCR)	3%	10%	17%	17%

Table 1 shows that annual population growth is predicted in more traces in the no action and non-bypass alternatives than if the cold-water alternatives are deployed. This makes sense given how important temperature is at regulating spawning in smallmouth bass.[28]

The preliminary modeling reported in Appendix A "predicts that smallmouth bass population growth (lambda) at river mile 15 and at the Little Colorado River confluence

[24] The preliminary modeling developed by Eppehimer and Yackulic (see Appendix A) "assesses the potential for smallmouth bass population growth rate at river mile 15 and river mile 61 for each year 2024-2027 "[b]ased on assumed functional relationships between smallmouth bass population dynamics, available habitat, predicted temperature responses, and rate of entrainment." The model's output predicts the rate of population growth (lambda) and shows the average annual percentage of traces showing such growth (lambda great than 1). Draft SEIS at 3-88; *see* report in Appendix A.
[25] Draft SEIS at 3-97.
[26] Figure 1, Appendix A, Draft SEIS at A-7.
[27] Data reproduced from Draft SEIS, Figure 1, Appendix A at A-7.
[28] See the detailed discussion of the science in Section III, below.

would be below 1.0 for only the cool mix and cool mix with spike flows. This means that these two alternatives, if implemented under the right conditions and model assumptions are accurate, could prevent population growth of the smallmouth bass in these two areas."[29] Given the modeled effectiveness of the cool mix flow option, we suggested utilizing the cool mix option in 2024 upon triggering of threshold temperatures and executing a comprehensive program to monitor, measure, and report the results of that effort (especially in backwater habitats) to determine if additional efforts (e.g. flow spikes) are necessary or if cool water bypass alone will lower water temperatures in those habitats and prevent the initiation of spawning by smallmouth bass. The cool mix flow option may be the most effective and possibly least controversial flow option (if any of these options address the concerns of the Zuni, Hopi, Navajo, or other tribes) from the perspective of working with the least invasive measures to honor the tribes' value of not taking life in the canyon.

While there was some population growth in traces for the Cold Shock and Cold Shock with Flow Spike alternatives, these alternatives still appear to have population growth in less traces than the no action and non-bypass alternatives. Reclamation should include these additional cold water flow options as additional measures to test as needed to cool water temperatures and prevent spawning and establishment of smallmouth bass. These options also have less impacts to hydropower production, so these might be alternatives that can be used in situations where those impacts are greatest and/or cannot be mitigated.

Reclamation should adopt and implement the full range of proposed cold-water flow options that tackle both the temperature of the Colorado River and disruptions to spawning through changes in river velocity. We understand that these cold-water alternatives will need to be implemented, monitored, and the results documented to fully understand their effectiveness and impacts to other LTEMP resources. The sooner we can test the effectiveness of these tools—hopefully in 2024 when conditions may be less dire in terms of reservoir elevations, warmwater releases, and nonnative fish passage, than is projected for 2025-2026—the more information we will have to help refine these flow options, mitigate resource impacts, and operate under more challenging conditions. We suggest moving forward will all four cold-water flow alternatives to allow a range of tools that can be deployed based on when and where the threat is highest for nonnative reproduction each year.

III. The Non-Bypass Alternative does not meet the purpose and need of the proposed action.

Reclamation should eliminate the Non-Bypass Alternative from consideration at this time because it does not meet the purpose and need of the proposed action and it fails to perform in preliminary modeling any better than the no action alternative in limiting the population growth rate of nonnative species in the Colorado River below Glen Canyon Dam. We appreciate that Reclamation modeled and analyzed this option for preventing smallmouth establishment below the dam considering its benefits for hydropower resources; however, the alternative (at least at current and projected Lake Powell reservoir elevations) does not

[29] Draft SEIS at 3-97.

address the problematic temperature regime in the Colorado River below the dam and thus does not meaningfully discourage or prevent recruitment in smallmouth bass. Further, this alternative may have additional negative effects on other LTEMP resources. Thus, under current and projected conditions, the non-bypass alternative does not meet the purpose and need.

As an initial matter, the flow options designed in the Draft SEIS are triggered when Glen Canyon Dam water releases through the penstocks reach a threshold temperature of 15.5°C (60°F). At that time, the goal is to reduce water temperatures in the Colorado River below Glen Canyon Dam to avoid the onset of spawning. The non-bypass alternative does nothing to address the threshold issue of increased water temperatures. Instead, the non-bypass alternative suggests releasing additional both low and high flow fluctuations to disrupt nesting by smallmouth bass and displace individual adult fish and harm the young being produced. This strategy essentially allows spawning and recruitment to continue. While the disruption of the physical habitat from flow fluctuations may result in nest abandonment or displace fry and eggs temporarily, it does not affect water temperature, thus allowing smallmouth bass the ability to renest, spawn and continue recruitment once river stage changes cease.

The Non-Bypass Alternative does not act to mitigate warm water temperatures in the Colorado River below Glen Canyon Dam. "Temperature is one of the most important factors limiting distribution of smallmouth bass (Bestgen 2018)"[30]. "Smallmouth bass have been observed laying eggs at water temperatures as low as 15 degrees Celsius (°C) (59 degrees Fahrenheit [°F]) in some systems; however, water temperature of 16°C (61°F) or greater are typically required for smallmouth bass to lay eggs."[31] The Draft SEIS states

> Water temperatures of 16°C (61°F) or greater are also required for young of year to grow significantly, if hatched. Growth of smallmouth bass at a temperature of 16°C (61°F) is marginal. Therefore, if a fish is hatched and maintained at approximately 16°C (61°F) for the length of a typical growing season, it would be very unlikely to grow large enough to survive the winter (Shuter et al. 1980; Dudley et al 2104).[32]

Thus, the best chance for limiting recruitment would be to keep temperatures below these thresholds so no eggs are laid or the young of year stay so small that they do not survive to become adults.

Preliminary modeling[33] of the potential annual population growth rate for smallmouth bass under the non-bypass alternative showed population growth in similar number of traces as the no action alternative. Generally, the analysis found that at both River Mile 15 and 61 the non-bypass alternative reduced "the estimated lambdas when compared with no action, but

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[30] Draft SEIS at 3-68.
[31] *See* Appendix A, Draft SEIS at A-1 to A-2.
[32] Appendix A describes the assumptions made including how release temperatures were calculated for every day of the year and an estimate of downriver warming was predicted based on similar model by Dibble et al. 2021.[32] *Id*. at A-2.
[33] See Draft SEIS, Figure 1, Appendix A at A-7.

did not stop population growth."[34] Figure 1, showed the number of traces that showed population growth (lambda greater than 1) :

Table 2. Forecast of Potential Annual Smallmouth Bass Population Growth Rate[35]

Non-Bypass Alternative	Percent of traces showing population growth (lambda >1)			
	2024	2025	2026	2027
River Mile 15 (Lees Ferry)	0%	7%	10%	17%
River Mile 61 (LCR confluence)	3%	10%	17%	17%

The percentage of traces showing population growth for the non-bypass alternative are the same as for the no action alternative. Reclamation found that "[t]he No Action Alternative would not meet the project's purpose or need."[36] Likewise, the non-bypass alternative does not meet the purpose and need of the proposal. The Fish and Wildlife Service, in its scoping comments for this SEIS, agreed that "[t]he scientific literature, in addition to recent flow and temperature modeling, indicate that cooling water temperatures to below 16°C is the only effective method to prevent spawning, recruitment, and establishment of smallmouth bass in Glen Canyon" and "this is the best method for preventing their spread into western Grand Canyon."[37]

The Non-Bypass Alternative fails to meet the purpose and need of the proposed action during the 2024-2027 timeframe. The purpose and need of the proposed action is "to analyze flow options at Glen Canyon Dam . . . to disrupt the establishment of smallmouth bass below Glen Canyon Dam *by limiting additional recruitment*" (Emphasis added).[38] While the non-bypass alternative seeks to use fluctuating flows to "cause male smallmouth bass to abandon nests in shallower nearshore habitats, such as backwaters or sloughs, and higher-velocity releases to displace eggs and fry, or cause abandonment by male smallmouth bass,"[39] these disruptions do not affect temperature "limiting additional recruitment." The Service "does not believe that penstock releases alone (the new Hydropower Alternative), would meet the purpose and need of this program in the short term as water temperatures at the penstock intakes are too warm to meet outflow temperature objectives needed to prevent spawning."[40]

[34] Id. at A-6.
[35] Data reproduced from Figure 1, Appendix A at A-7.
[36] Draft SEIS at 2-10.
[37] USFWS 2023, Scoping Comments at 3.
[38] Draft SEIS at 1-6.
[39] Draft SEIS at 3-94.
[40] USFWS 2023, Scoping Comments at 3.

IV. The Non-bypass Alternative's benefits to hydropower do not outweigh the risks to other cultural, environmental, and recreational resources in Marble and Grand Canyons.

Reclamation should not move forward with the Non-Bypass Alternative because its benefits to hydropower generation do not outweigh the risks to other resources in Marble and Grand Canyons. The non-bypass alternative is the only flow option that does not "operate within the spatial and temporal bounds and under the assumptions of the existing analysis in the LTEMP FEIS."[41] Thus, Reclamation should be more cautious about implementing such an option without greater certainty of the impacts to LTEMP resources as outlined throughout the Draft SEIS as follows:

Geomorphology and Sediment—The non-bypass alternative "would cause the greatest reductions in mass balance starting in Spring 2025" and "would generally produce the second-smallest sandbars, slightly surpassing volumes that would be generated under alternatives without flow spikes."[42]

Aquatic Resources/Native Fish—High flows resulting from the non-bypass alternative may cause "some young [native] fish [to] become displaced from shorelines or backwaters and exposed to predation and starvation," but the effects should be minimal. The low flows, however, "if they occurred April - June, could negatively affect young and juvenile flannelmouth suckers and bluehead suckers that could be displaced from desiccated shoreline habitats and backwaters."[43]

Aquatic Resources/Rainbow Trout—The flow fluctuations in the non-bypass alternative are "expected to displace young and juvenile [rainbow] trout and expose these fish to starvation and predation."[44]

Aquatic Resources/ Food Base—The non-bypass alternative's low flows "would desiccate much of the river bottom, especially the shallow shelves where most primary and secondary production occur" and the Draft SEIS admits that the effects of 2,000 cfs on the food base have not been evaluated."[45]

Riparian Vegetation/Wildlife—The daily flow fluctuations that would occur as a result of the non-bypass alternative may reduce shoreline stability[46] and such "instability could lead to a decrease in the abundance of aquatic invertebrates and greater disruption to wildlife habitat."[47] "Amphibians, reptiles, and insects may be less able to adapt to the less stable shoreline environment, resulting in decreased biodiversity or abundance."[48]

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[41] Draft SEIS at 3-16.
[42] *Id.* at 3-47.
[43] *Id.* at 3-95.
[44] *Id.*
[45] *Id.* at 3-96.
[46] *Id.* at 3-103 and 3-112.
[47] *Id.* at 3-112.
[48] *Id.*

Threatened and Endangered Species—The non-bypass alternative's low flow events "have rarely been seen in the Colorado River downstream of Glen Canyon dam" and studies (Valdez and Ryel 1995) indicate "that much of the shoreline talus habitat and backwaters used by juveniles were dewatered during extreme low-flow events, forcing fish to move to mainstream habitats" at risk of greater predation.[49] This may harm native humpback chub and razorback sucker.

Cultural Resources/Archaeological Sites—"The low flows proposed under the Non-Bypass Alternative are outside those analyzed in the LTEMP FEIS and may lead to the exposure of archaeological sites and sacred sites."[50] Such "exposure could lead to damage or disturbance from wave action, wet/dry effects, and increased visitation."[51]

Tribal Resources/Taking of Life in the Canyons—The non-bypass alternative has the greatest impacts on fish compared to the other alternatives.[52] The high and low "flows would be intended to reduce survival of smallmouth bass eggs and fry through desiccation of eggs, abandonment of nests, and impacts on fry."[53] The non-bypass alternative adds to the cumulative impacts on tribal values including those expressed by the Zuni who "have linked fish mortality in the Canyons with adverse physical, mental, and psychological effects within the Zuni Pueblo."[54] "Because the action alternatives could result in the taking of life within the Canyons, they would have an adverse impact on the Zuni culture and TCPs, if Reclamation implements the flow options with expected fish mortality."[55]

Recreation/Fishing—The non-bypass alternative's "rapid fluctuations in water levels may [] disrupt fishing during implementation." High flows are "likely to displace young and juvenile rainbow trout and expose these fish to starvation and predation,"[56] while low flows that occur "between January and March, [] could negatively affect eggs and fry through desiccation and displace juvenile [rainbow trout]."[57]

Recreation/Boating—Under the non-bypass alternative, low flows "could limit the ability of boats to freely navigate in the Glen Canyon reach, which would adversely impact boating and the rafting concessionaire in the short term compared with other alternatives."[58] In the Grand Canyon, the low flows of 2,000 cfs "would be below the safe whitewater minimum, which would adversely affect whitewater boating opportunities [in the park]"[59] "and the ability of Hualapai River Runners to provide boating trips compared with all other alternatives."[60]

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[49] *Id*. at 3-133 and 3-134.
[50] *Id*. at 3-172, 3-180, and 3-181.
[51] *Id*. at 3-172.
[52] *Id*. at 3-179
[53] *Id.*
[54] *Id.*
[55] *Id*.
[56] *Id*. at 3-190.
[57] *Id*.
[58] *Id.* at 3-193.
[59] *Id*. at 3-191 and 3-193.
[60] *Id*. at 3-191.

Recreation/Socioeconomic—"The high and low fluctuations of water under the Non-Bypass Alternative could impact the boater experience in both the Glen Canyon and Grand Canyon reaches." The flow "unpredictability could pose challenges for boaters navigating through the area" and low flows "would limit the ability of boats to navigate freely in the Glen Canyon reach. This would adversely impact boating and rafting concessionaires' operations compared to other alternatives."[61]

To summarize, the non-bypass alternative has direct, indirect, and cumulative effects to nearly all the LTEMP resources and thus requires Reclamation to eliminate it from further consideration. This alternative likewise does not meet the mandates of the GCPA "to protect, mitigate adverse impacts to, and improve" the cultural and environmental resources in Grand Canyon or ensure the survival and recovery of native fish listed under the ESA.

V. Reclamation should amend the HFE protocol to allow for more consistent and naturally timed spring high flows through Grand Canyon.

A. Adjusting the sediment accounting period is key for improving Reclamation's ability to implement HFEs and ensure sediment resources are protected as mandated by the GCPA.

High flow experiments are critical to protect, mitigate adverse impacts to, and improve the transport and accumulation of sediment in Marble and Grand Canyons as mandated by the GCPA. "Glen Canyon Dam effectively cut off approximately 95 percent of the historical sediment supply from the upper watershed (Topping et al. 2000)."[62] Since the dam was closed in 1963, at least 28 million metric tons of sand has eroded and about half of that eroded in the late 1990s, including six metric tons from each Marble and Grand Canyons.[63] 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.

"Sandbars and beaches are important for biological, cultural, and recreational resources along the Colorado River."[64] Sandbars are vital as a foundation for riparian vegetation, to create low velocity habitat for young fish, provide a source of sand to be transported by wind to protect archaeological resources, and to build camping beaches for recreation.[65] These are all values the GCPA was intended to safeguard and are key to consider when thinking about

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[61] *Id*. at 3-209.
[62] *Id.* at 3-35.
[63] 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. Available at: https://doi.org/10.1029/2020JF005565
[64] Final Near-Term SEIS at 3-89.
[65] *Id.*

making changes to the sediment accounting windows that currently exist in the HFE protocol.

Amending the HFE protocol to allow for more consistent high flows through Grand Canyon is needed given climate change. The warming climate and overallocation of water in the Colorado River Basin have led to lower water levels at Lake Powell, which has resulted in decisions by the Secretary of the Interior to not implement HFEs in years when the sediment triggers were met including 2015, 2021, and 2022.[66] "The absence of Spring HFEs during the first 10 years of the HFE protocol, coupled with analyses documenting reduced transport of fine sediments in years with low reservoir volumes and low Lake Powell elevations, have prompted the [Glen Canyon Dam Adaptive Management Program] to reassess the HFE protocol."[67] The two 6-month (fall and spring) sediment accounting windows are proposed to be adjusted to operate under a new 1-year window in all but the no action alternative.[68]

The HFE protocol is being updated "to improve Reclamation's ability to implement HFE releases" by adjusting sediment accounting periods and HFE implementation windows.[69] Failing to take action to ensure more frequent and high magnitude HFEs is contrary to the mandates of the GCPA and does not meet the purpose and need of the proposed action. The Draft SEIS provides that taking no action under the existing conditions of drought and aridification "could result in the continued trend of fewer and smaller HFE releases."[70] Like historically, "HFEs are more likely to be triggered in the fall with low likelihood of HFEs in the spring," and would be subject to the same concerns that HFEs would be triggered but not implemented like in 2021 and 2022.[71] Reclamation concludes that "the reduced number and magnitude of HFE releases would not optimize the best available science for sediment accounting" and determined that the no action alternative does not meet the purpose and need of the proposed action.[72] Further, fewer and smaller HFEs would amplify the impacts on sediment resources, which is contrary to the mandates of the GCPA.

B. The cold-water alternatives combined with modification of the HFE protocol will lead to a greater chance of spring HFEs and if flow spikes are combined with HFEs where possible dual benefits for sediment resources and preventing smallmouth bass establishment may be possible.

The cold-water alternatives in combination with modification of the sediment accounting window will lead to favorable conditions for high flow experiments that have greater chance of occurring in spring mimicking pre-dam hydrology. The cold-water alternatives without flow spikes "would increase the likelihood of spring HFEs by approximately 26 percent."[73]

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[66] 2023 Proposal to Amend the High-Flow Experiment Protocol and Other Considerations developed by the Flow at 5. Available at: https://www.usbr.gov/uc/progact/amp/amwg/2023-08-17-amwg-meeting/20230817-ProposalAmendHigh-FlowExperimentProtocolOtherConsiderations-508-UCRO.pdf.
[67] *Id.* at 5.
[68] Draft SEIS at 2-5.
[69] *Id.* at 1-6.
[70] *Id.* at 2-10.
[71] *Id.* at 3-42.
[72] *Id.*
[73] *Id.* at 3-42.

The duration of springs HFEs would also increase to about 110 hours on average, but fall HFEs duration will likely decrease by half (56 hours compared to 98 hours under no action).[74] The sediment mass balance for the alternatives without flow spikes would be slightly higher than the no action alternative because on average the HFE duration (spring and fall) would be slightly shorter.[75] Sandbar volume would continue to increase with smaller, but more frequent growth.[76]

The cold-water alternatives with flow spikes lead to similar HFE regimes as those that would occur without flow spikes, but in some years, "would cause sand export in the lead-up to HFE implementation" reducing the resulting duration.[77] Thus, Reclamation should combine flow spikes with HFEs whenever possible and avoid flow spikes outside the accounting window, so as not to export sand prior to the HFE potentially affecting HFE duration or lead to deferral.[78] Further, flow spike alternatives that "increase sediment export, thereby decreasing the amount of available sand to perform an HFE . . . would cause a reduction in sandbar size, because HFEs are the only mechanism for providing substantial deposition of high elevation sandbars (Hazel et al. 2022)."[79] Flow spikes could lead to a negative mass balance over the long-term.[80]

As intended, the change to the sediment accounting period should "enable decision-makers to more easily implement HFEs in the spring, which would better approximate pre-dam conditions of high spring run-off flows."[81] While "sand mass balance would undergo more gradual and frequent decreases following HFEs and this trend would be mirrored in sandbar growth patterns," the result may be smaller and slower growth but more consistent implementation and better timing of HFEs.[82] When combined with the cold-water alternatives, Reclamation should combine HFE and flow spikes whenever possible to meet multiples goals of getting cold water into backwater habitats, disrupting spawning, and creating a river stage large enough to transport sediment and build sandbars in Marble and Grand Canyons. These efforts are needed to protect, mitigate adverse impacts to, and enhance the cultural, environmental, and recreational resources in the canyons. The Trust is supportive of modifying the sediment accounting window and strongly encourages Reclamation to proceed with this amendment of the HFE protocol.

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[74] *Id.*
[75] *Id.*
[76] *Id.* at 3-46.
[77] *Id.* at 3-43.
[78] *Id.* at 3-43 and 3-47
[79] *Id.* at 3-46 and 3-47.
[80] *Id* at 3-46.
[81] *Id.* at 3-47.
[82] *Id.*

C. Reclamation needs to be explicit about whether Lake Powell reservoir elevations of 3,500 feet will prevent implementation of HFEs in practice and take additional measures to ensure continued HFEs are possible.

The Draft SEIS assumes that no HFEs will occur if Lake Powell is below 3,500 feet.[83] The Draft SEIS does not clarify at what point Lake Powell falling below 3,500 feet eliminates the HFE (e.g. in the water year, within the month the HFE is planned). This should be made explicit so that it is not used too narrowly or broadly to prevent HFEs when triggered. Further, it should be clearly stated that, flow spikes can and will occur as needed to prevent the establishment of smallmouth bass despite the elevation of Lake Powell and will be timed with HFEs whenever possible. If this is not the case, then the flow options with flow spikes have little to no utility when the conditions are the worst for passage of nonnative fish and warmwater conditions in the Colorado River below Glen Canyon Dam. Finally, Reclamation has a responsibility under the GCPA to protect, mitigate adverse impacts to, and to enhance sediment resources in Grand Canyon. HFEs are critical to meeting this charge. Reclamation needs to work to secure additional water conservation measures in the basin to ensure that Lake Powell reservoir elevations stay well above 3,500 feet (the threshold for HFEs enumerated in the Draft SEIS) to ensure that cultural and environmental resources can be sustained.

VI. Reclamation's decision needs to honor the mandates of the Grand Canyon Protection Act.

A. Reclamation has authority to prioritize the cultural, environmental, and biological resources in Marble and Grand Canyons over hydropower interests.

Reclamation has authority under the GCPA to ensure that the environmental, cultural, and biological resources below Glen Canyon Dam are protected even if in so doing impacts occur to hydropower resources. Section 1802(a) of the GCPA 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 National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use.

(Emphasis added.)[84]

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[83] Draft SEIS at 2-5.

[84] The Draft SEIS at 1-9, suggests a much narrower view of the law that "LTEMP [] controls the timing of annual releases to improve downstream conditions, meeting the requirements of the Grand Canyon Protection Act, and minimizing—consistent with other laws—adverse impacts on downstream natural, recreational, and cultural resources." We believe this is too narrow an interpretation of the authority in section 1802(a) of the GCPA.

Former Reclamation Commissioner and Deputy Secretary of the Interior, Michael Connor, described the Act[85] 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."[86] Reclamation has authority under the GCPA that "gives priority to protection of the Grand Canyon, and all other values must operate within this mandate."[87] We request that Reclamation consider and prioritize safeguarding humpback chub and other native species over hydropower in this instance.

B. The GCPA should be included in the Draft SEIS as a key source of authority.

The GCPA should be included as the source of authority for the Long-term Experimental and Management Plan in the introductory paragraph of the Draft SEIS at 1-1. The existing statement emphasizes hydropower generation of the dam without putting that in context of other resources that are required to be managed by Reclamation including the mandate to "protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established." The Trust recommends being explicit about Reclamation authority to "adaptively manage this stretch of river" by including the following additional language:

> To adaptively manage this stretch of river ***according to the mandates of the Grand Canyon Protection Act of 1992 and other laws***, the United States (US) Department of the Interior (Department) Bureau of Reclamation (Reclamation), developed the Long-Term Experimental and Management Plan (LTEMP) for operations of Glen Canyon Dam, the largest hydropower-generating unit of the Colorado River Storage Project (CRSP; DOI 2016a).[88]

(Emphasis added).

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[85] 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*.
[86] *Id.* at 154.
[87] *Id.* at 137.
[88] Draft SEIS at 1-1.

VII. The Endangered Species Act requires Reclamation not to jeopardize the survival and recovery of endangered and threatened species.

The Endangered Species Act provides "a program for the conservation of . . . endangered species and threatened species" and "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved."[89] Congress intended by enacting the statute "to halt and reverse the trend towards species extinction, whatever the cost."[90] The ESA mandates the federal agencies "afford first priority to the declared national policy of saving endangered species."[91]

Section 7 of the ESA prohibits federal agencies from undertaking actions that are "likely to jeopardize the continued existence" of any listed species or "result in the destruction or adverse modification of" critical habitat.[92] "Jeopardy" results when it is reasonable to expect, "directly or indirectly," the action would appreciably reduce "the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."[93] "Adverse modification" is defined as "a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species."[94]

As such, Reclamation has both a procedural and substantive obligation under Section 7(a)(2) of the ESA. First, to satisfy its procedural duty, Reclamation must consult with the Service before undertaking any "action" that "may affect" a listed species or its designated critical habitat using the best available science.[95] Second, based on that formal consultation, the Service must issue a biological opinion to make a substantive determination and explain whether the agency action is likely to cause jeopardy to any listed species.[96]

Reclamation's ongoing actions under the 2016 Long-term Experimental and Management Plan are taken pursuant to the 2016 LTEMP Biological Opinion[97] issued by the Service, which found no jeopardy to listed species at that time. However, the 2016 LTEMP Biological Opinion detailed conservation measures necessary 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

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[89] 16 U.S.C. § 1531(b).
[90] *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 184 (1978).
[91] *Id.* at 188.
[92] 16 U.S.C. § 1536(a)(2).
[93] 50 C.F.R. §402.02.
[94] *Id.*
[95] 16 U.S.C. § 1536(a)(2); 50 C.F.R. §402.14(a).
[96] 16 U.S.C. § 1536(a)(2); 50 C.F.R. §402.14(h).
[97] 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-11 to E-12, E-69. Available at https://www.usbr.gov/uc/DocLibrary/Reports/LTEMPReports/20230628-LTEMPBiologicalOpinion-ProgressReportComplianceConservationMeasuresFY2022-508-UCRO.pdf.

Reclamation took steps to protect the humpback chub from these threats. The conservation measures set out the 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.[98]

"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."[99] It is clear from the 2016 Biological Opinion that a need already existed to take actions around nonnative warmwater fish in 2016 and that it "may become a more frequent need … with lower reservoir elevations and warmer dam releases."[100]

As detailed in the Draft SEIS, the threat to the threatened humpback chub and endangered razorback sucker from the establishment of nonnative fish below the dam has increased significantly since 2022. Low reservoir elevations at Lake Powell—that have and will likely continue to pass nonnative fish through the penstocks as well as facilitate warmer water releases from the dam—have created conditions in Marble and Grand Canyons that make the establishment of smallmouth bass below Glen Canyon Dam possible and likely if immediate actions are not taken by Reclamation. The problem may not be as acute today had Reclamation fulfilled the conservation measures it committed to in 2016. Given the three-fold increase in captures of smallmouth bass below Glen Canyon Dam in 2023 and urgent need for the actions proposed in the Draft SEIS, Reclamation must reconsult with the Service. The Service should review Reclamation's progress over the past decade and determine if more clear and mandatory measures are needed on the part of Reclamation to ensure the continued survival and recovery of humpback chub and razorback sucker in the Grand Canyon. The Service should consider the long-term consequences of nonnative fish establishment in the canyons when making its jeopardy decision.

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[98] *Id*. at E-11-E-12.
[99] *Id*. at E-69.
[100] *Id*. at E-12.

VIII. Reclamation should consider the most effective and least invasive means for preventing the establishment of smallmouth bass in the Colorado River below Glen Canyon Dam.

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 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 Draft SEIS process, including during planning, design and implementation of actions related to preventing the establishment of nonnative fish in the Grand Canyon, and should include travel to respective reservations to reduce barriers to conversation and consultation. Further, preventative methods—such as creating a barrier in Lake Powell to ensure nonnative species do not pass through the dam—have long been advised as an action Reclamation could take that may not conflict with the 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 this Draft SEIS. The Trust supports a decision by Reclamation to implement the proposed cold-water alternatives and to modify the sediment accounting window for high flow experiments to facilitate more frequent and naturally timed high flows in Marble and Grand Canyons. Ideally, HFEs would be timed with flow spikes where possible to create benefits for sediment resources and address smallmouth bass spawning. We believe that under the urgent circumstances these short-term cold-water alternatives will provide additional tools for Reclamation to prevent spawning and establishment of nonnative species in the Grand Canyon and it is important to have all tools available. The failure to act—on this threat to the largest population of humpback chub in the basin and to numerous other native fish that have found refuge from nonnative predation and competition in the Grand Canyon—will over the long term diminish and likely destroy the successful recovery of the remaining assemblage of Colorado River native fish and may doom their survival. Further, we believe modifying the sediment accounting window will restore the opportunity and frequency of high flow events in Grand Canyon under low reservoir conditions, which will help restore natural processes such as spring peak flows, transport and redistribute sediment throughout the canyons, build sandbars, and provide sand to protect archaeological sites.

We look forward to working with you to integrate this solution with the larger challenge of sustainable management of the Colorado River Basin.

Sincerely,

Jen Pelz
Water Advocacy Director
Grand Canyon Trust