



October 26, 2023

Via electronic mail

Ms. Kathleen Callister
Adaptive Management and Water Quality Division Manager
U.S. Department of the Interior
Bureau of Reclamation
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Dear Ms. Callister:

American Rivers' Southwest Regional Program (American Rivers) provides these comments in response to the U.S. Department of Interior's Bureau of Reclamation's (Reclamation) 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 (GCD-LTEMP). This letter is intended to satisfy our comments in the scoping phase of this action. We previously submitted the following comments and recommendations as part of the Glen Canyon Dam Smallmouth Bass Environmental Assessment (SMB-DEA), and wish to resubmit these comments at this time.

Additionally, we wish to thank and applaud Reclamation for including the Proposed Amendments to the High Flow Experiment (HFE) Protocol, as approved by the Glen Canyon Dam Adaptive Management Work Group (GCD-AMWG) in August, 2023. American Rivers is grateful to both the GCD-AMP for developing and approving these Proposed Amendments, as well as to Reclamation for intending to include those Amendments in each of the Alternatives to be analyzed in this and the upcoming public comment periods. The LTEMP SEIS will re-evaluate the HFE sediment accounting period and implementation window to more fully achieve the LTEMP goals as they relate to using HFEs. If adopted, these Amendments will add much needed flexibility and greater opportunity for the implementation of HFEs in the future.

With regards to smallmouth bass control options, American Rivers continues to support Alternative B, as outlined in the previously proposed Draft Environmental Assessment (EA), as our Preferred Alternative to control small mouth bass populations below Glen Canyon Dam and in the upper reach of Marble Canyon. You will find our complete analysis and comments from the draft EA document below. We appreciate Reclamation's consideration of these comments.

I. Description of American Rivers

American Rivers is a national, non-profit, 501(c)(3) river conservation organization with offices in Washington, D.C., Flagstaff, Arizona, and Denver, Glenwood Springs, and Durango, Colorado. Serving more than 300,000 members and supporters nationwide and more than 50,000 supporters in the Colorado River Basin, we are dedicated to protecting wild rivers, restoring damaged rivers, and conserving clean water for people and nature.

Additionally, American Rivers promotes public awareness about the importance of healthy rivers and the threats that face them. American Rivers' programs address flood control and hydropower policy reform, endangered aquatic and riparian species protection, instream flow, clean water, and urban rivers. One of its principal programs is the protection of rivers from uneconomic or otherwise unwise hydroelectric development that negatively impacts fish and other aquatic organisms, water quality, recreation, and cultural values of North American rivers.

American Rivers also participates in the Glen Canyon Dam Adaptive Management Program (GCDAMP) Adaptive Management Work Group.

II. Comments on the DEA

A. The Proposed Action is needed to prevent the establishment of smallmouth bass below the GCD.

The DEA (p. 1-5) states, “[t]he proposed action’s purpose and need are to prevent the establishment of smallmouth bass below the GCD, which could threaten core populations of humpback chub in and around the Little Colorado River and its confluence with the mainstem.” American Rivers agrees that protection of endemic and endangered humpback chub from high-risk, non-native smallmouth bass (SMB) is an important purpose to avoid or forestall dramatic alteration of the Colorado River ecosystem and the viability of threatened and endangered fish. The “[p]resence and establishment of invasive fish could dramatically alter the [Colorado River ecosystem (CRe)] and the status of federally listed fish.”¹

Moreover, the science shows the Proposed Action to prevent the establishment of SMB below Glen Canyon Dam (GCD) is needed to achieve that purpose.

The Colorado River has been reshaped physically and biologically by extensive water development projects and climate change. As a result of the changed riverine landscape, native fish species are in decline and opportunistic non-native fish species are ascendant:

The Colorado River basin was historically home to more than thirty mostly endemic native fish species, including the four “big river” fishes that are federally endangered [or threatened]: Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail (*Gila elegans*) (Minckley and Deacon 1991, Mueller and Marsh 2002). Dams, diversions, and reservoirs have fundamentally changed the physical and biological template of the river and opened niche space for nonnative species through stabilization of flow regimes and thermal regime impairment (Olden et al. 2006, Bestgen and Hill 2016). In recent decades, rapidly spreading opportunistic nonnative fish have contributed to observed declines in native species (Martinez et al. 2014, Bestgen et al. 2018).²

Temperature is an essential component of fish habitat.³ SMB have a higher tolerance for warmwater releases than native species, giving SMB a competitive advantage over humpback

¹ Glen Canyon Dam AMP, “Invasive Fish Species Below Glen Canyon Dam: A Strategic Plan to Prevent, Detect and Respond” (“Draft Strategic Plan”), Att. B (“Science plan to support management of smallmouth bass in the Glen Canyon reach of the Colorado River, Lees Ferry to Glen Canyon Dam”), p. 4.

² Dibble, K. L., C. B. Yackulic, T. A. Kennedy, K. R. Bestgen, and J. C. Schmidt. 2021. Water storage decisions will determine the distribution and persistence of imperiled river fishes. *Ecological Applications* 00(00):e02279. 10.1002/eap.2279 (“Dibble et al. 2021”). *See also* draft Strategic Plan, Att. B (“SMB invasion into rivers throughout the globe have been associated with substantial population declines, and in many instances, extirpations of native fish species [citations omitted]”).

³ Dibble et al. 2021 (emphasis added).

chub where and when their ranges overlap, increasing the need for intervention to protect the native species:

Fish are ectotherms, and as such, the thermal regime of their environment is critically important in determining species distribution, abundance, and growth [citations omitted]. There is substantial overlap in the thermal suitability of river segments for growth of warmwater native and nonnative fishes across the basin, and current evidence suggests nonnative species have a competitive or predatory advantage over native species in places where their ranges overlap [N]onnative species in the basin have responded more strongly to recent river warming than native species. *Thus, in the absence of effective management interventions, future warming is likely to disproportionately benefit nonnative species to the detriment of native species.*⁴

Addressing the threat posed by SMB became more urgent when evidence of SMB reproduction was identified below GCD in 2022:

In the upper Colorado River basin, SMB are considered the greatest threat to the persistence of threatened and endangered fish species (Johnson *et al.* 2008). SMB are fecund, adaptable to a substantial range of environmental conditions, and extremely capable predators able to consume many size classes of the federally listed humpback chub (*Gila Cypha*) [citations omitted]. These traits have allowed SMB to quickly increase in abundance and exert negative population level impacts to species that did not co-evolve with them. *SMB have rarely been observed in the Colorado River ecosystem below Glen Canyon Dam ... during the last two decades [citation omitted], however, reproduction was identified for the first time in 2022 [citation omitted].*⁵

On May 18, 2022, the Secretary of the Interior directed the Glen Canyon Dam AMP to “[d]evelop a strategic plan to prevent, detect, and respond to cool- and warmwater invasive fish establishment below Glen Canyon Dam.”⁶ The Secretary also directed the development of “2-4 operational alternatives that could help prevent cool- and warmwater invasive fish establishment, while minimizing potential adverse effects to other resources,” and indicated alternatives within the scope of the Record of Decision (ROD) for the Glen Canyon Long-Term Experimental Management Plan (LTEMP) would be prioritized.⁷

In response, the Glen Canyon Dam AMP, through its Smallmouth Bass Ad Hoc Group, developed the “Invasive Fish Species Below Glen Canyon Dam: A Strategic Plan to Prevent,

⁴ *Id.* at 6 (emphasis added).

⁵ Draft Strategic Plan, Att. B, p. 1.

⁶ [GCDAMP Action Tracker Report](https://www.usbr.gov/uc/progact/amp/amwg/2022-05-18-amwg-meeting/20220518-AMWGMeeting-ActionItemTrackingReport-508-UCRO.pdf) (May 26, 2022), available at <https://www.usbr.gov/uc/progact/amp/amwg/2022-05-18-amwg-meeting/20220518-AMWGMeeting-ActionItemTrackingReport-508-UCRO.pdf> (last accessed Mar. 10, 2023), p. 2.

⁷ *See id.*

Detect and Respond,” a draft of which was presented to the Glen Canyon Technical Work Group on January 26, 2023 (“draft Strategic Plan”). The draft Strategic Plan explains the existing conditions of low Lake Powell levels resulting in warmwater releases through the GCD penstocks, which have created downstream conditions more favorable to establishment of smallmouth bass.⁸ Its recommendation actions are premised on the finding that “[p]resence and establishment of invasive fish could dramatically alter the [Colorado River ecosystem (CRE)] and the status of federally listed fish.”⁹

The draft Strategic Plan states the “preference for invasive species management is prevention,” and that “[t]o prevent the establishment of invasive fish species in the CRE, a combination of long-term, mid-term, and short-term actions are required.”¹⁰ It recommends that, “[w]hile long-term, more permanent action(s) are being prepared and implemented, a combination of mid-term, and short-term actions *are required.*”

The draft Strategic Plan also describes the significantly increased costs, and potential impossibility, of eradicating smallmouth bass if prevention actions failed:

If an invasive species becomes established, eradication will likely not be possible and attempts could come at the cost of other programs or resources in the CRE. On the other hand, “functional eradication” or suppression of a species population is difficult to achieve in a large system such as the CRE [citations omitted]. If invasive fishes become established in the CRE, the costs of extended suppression attempts could come at the expense of other CRE programs and resources.¹¹

Figure 1 of the draft Strategic Plan illustrated the increased cost of managing invasive species if prevention actions are not successful:

⁸ “Based on low elevations projected at Lake Powell by the August (2022) 24-Month Study produced by Reclamation, prevention of invasive fish establishment should include long-term preparation for continued low lake elevations and warmer release temperatures. The penstocks are at a fixed elevation of 3470 ft (centerline), and as lake levels drop, the depth to penstocks decreases. ... This results in increased thermal suitability for warmwater fishes downstream of GCD, and likely increased rates of fish entrainment and passage.” Draft Strategic Plan, pp. 3-4.

⁹ *Id.* at 4.

¹⁰ *Id.* at 7.

¹¹ *Id.*

Figures

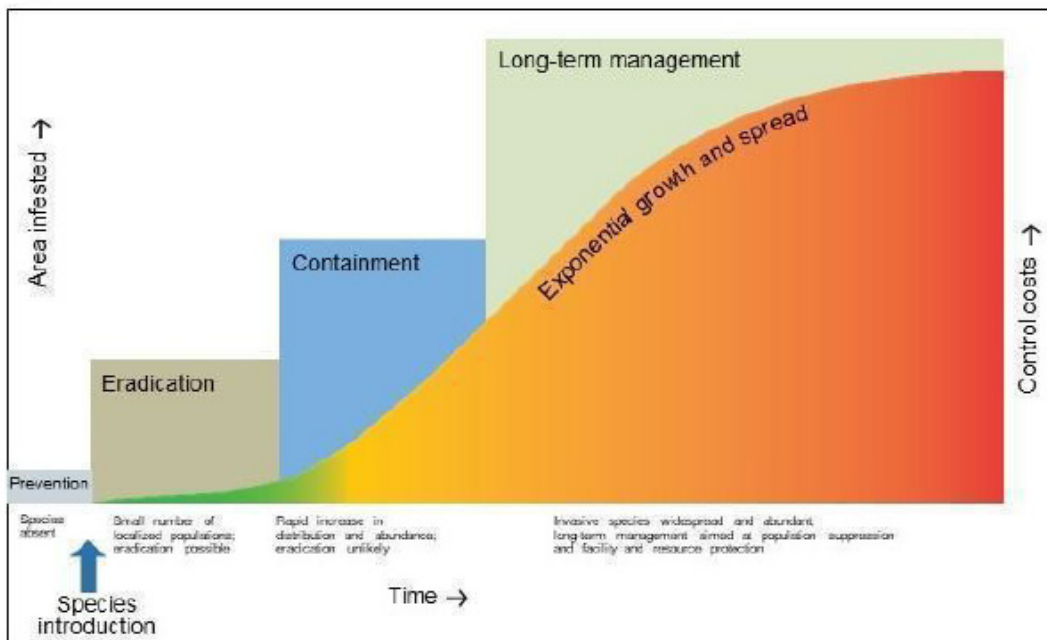


Figure 1. Phases of the Invasion Curve. United States Department of the Interior, *Invasive Species Strategic Plan 2021-2025*. (Adapted from Rodgers, 2010. *Invasive Plants and Animals Policy Framework*. State of Victoria, Department of Primary Industries)

The Proposed Action to implement operational alternatives in the near-term is needed to prevent establishment of SMB consistent with the Secretary’s directive and the draft Strategy Plan prepared by the Glen Canyon Dam Adaptive Management Program in response to that directive.¹² As described in the DEA (p. 2-1), the Proposed Action could be implemented as early as spring 2023 and have immediate effect in creating environmental conditions that are unsuitable for SMB spawning.¹³ The opportunity for immediate implementation is important because conditions this spring are expected to be favorable for SMB if no action is taken.

¹² Operational alternatives can help achieve the goal of “prevent[ing] establishment during a transition period to more long-term solutions (e.g., infrastructure to minimize fish passage and/or changes to much deeper withdrawal depths).” Charles B. Yackulic and Drew Eppheimer, U.S. Geological Survey, Southwest Biological Science Center, Grand Canyon Monitoring Research Center, “Operational alternatives to address warmwater invasives,” available at https://www.usbr.gov/uc/progact/amp/amwg/2022-08-18-amwg-meeting/20220818-Yackulic_Op_Alts_AMWG_508.pdf (last accessed Mar. 10, 2023).

¹³ U.S. Geological Survey staff has previously described the importance of operational and non-operational measures, but also stated, to their knowledge, there is no example where “establishment of warmwater nonnatives in a large river system like the Colorado River in the Grand Canyon segment has been prevented or reversed while environmental conditions remained suitable.” *Id.* Resource managers in the Southwest have increasingly explored intervention in the form of “flow management strategies to suppress smallmouth bass reproduction while also benefitting native endemic species through the timing of flood disturbance events [citations omitted].” Dibble et al., p. 6.

However, as explained in the DEA (p. 2-1), Reclamation would determine whether future flow releases were warranted based on conditions at the time of implementation.¹⁴ Future implementation of the Proposed Action would also depend on the monitoring data of the effectiveness of the flow releases and other management actions, which could also include non-flow measures.

B. The Proposed Action would be implemented consistent with selected authorities that inform GCD operations and would help accomplish the purposes for which several of those authorities were enacted.

The DEA (pp. 1-5 – 1-9) summarizes relevant legal and regulatory authorities that inform GCD operations. These authorities formalize the Colorado River stakeholders’ collective commitment to working together to preserve and enhance the ecological, cultural, and other values of the river. We briefly discuss how the Proposed Action would be consistent with highlighted authorities below. The Proposed Action would also help to protect the work and investment undertaken through other fish recovery programs in the Colorado River Basin.

1. Grand Canyon Protection Act of 1992

As stated in the DEA (p. 1-5), the Grand Canyon Protection Act of 1992 (GCPA) “was enacted to ‘protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park (GCNP) and Glen Canyon National Recreation Area (GCNRA) were established.’” Those values include, but are not limited to, natural and cultural resources, and visitor use. The DEA demonstrates the Proposed Action is consistent with the GCPA.

2. Glen Canyon Dam Adaptive Management Program

Building on the principles of the GCPA, Congress established the GCDAMP in 1997 to facilitate operation of GCD “in such a manner as to protect, mitigate adverse impacts to, and improve the values for which [GCNP] and [GCNRA] were established.”¹⁵ This program focuses on the operational changes, particularly the adjustment and study of flow releases to improve outcomes for natural resources south of the dam:

Reclamation is in charge of modifying flows for experiments, and the U.S. Geological Survey [USGS] conducts monitoring and other studies to evaluate the effects of the flows. The results are expected to better inform managers how to provide water deliveries and conserve species.¹⁶

¹⁴ “The proposed action with flow options provides Reclamation with flexibility to adaptively manage water releases from GCD to target smallmouth bass.” DEA, p. 2-1.

¹⁵ Report No. R45546, p. 13.

¹⁶ *Id.*

As stated in the DEA, implementation of the Proposed Action, like other GCDAMP activities, would be required to comply with all relevant legal authorities. Thus, while the “implementation of the GCDAMP provides for flexibility in adaptive the dam’s operations in order to facilitate continued scientific research and monitoring,” the GCDAMP’s activities cannot prevent “the dam from achieving its primary purposes.” Even “[a]s environmental experimentation and study continues ... the Secretary must continue to operate Glen Canyon Dam to meet the purposes established by Congress.” Further, section 1802(b) of the GCPA expressly requires the Secretary operate GCD

in a manner fully consistent with and subject to the Colorado River Compact, the Upper Colorado River Basin Compact, the Water Treaty of 1944 with Mexico, the decree of the Supreme Court in *Arizona v. California*, and the provisions of the Colorado River Storage Project Act of 1956 and the Colorado River Basin Project Act of 1968 that govern allocation, appropriation, development, and exportation of the waters of the Colorado River basin.

The DEA shows that implementation of the Proposed Action would have negative impacts on certain resources, particularly hydropower. However, the DEA’s analysis does not show that implementation of the Proposed Action to prevent establishment of SMB would also *prevent* the achievement of the GCD’s purposes.

It is also important to note that the GCDAMP has largely been successful in using science to improve GCD operations to better protect environmental, cultural, and recreational values while seeking to minimize adverse impacts to consumptive water users and hydropower. This has required significant investment in the implementation of the GCDAMP.¹⁷ The program is funded at approximately \$10 million annually, which will add up to approximately \$250 million in funding over the life of the program.¹⁸ The anticipated benefit of this investment would likely be significantly diminished if the program was required to respond SMB becoming established below GCD.

3. GCD Long-Term Experimental and Management Plan EIS

As described the DEA (p. 1-7), the Long-Term Experimental and Management Plan (LTEMP) Environmental Impact Statement (EIS)

was developed to better operate GCD in a manner to improve and protect important resources identified by the GCDAMP while maintaining compliance with relevant laws. The LTEMP Final EIS created adaptive management practices using best current scientific information to guide dam operations and experimentation for 20 years following the ROD. Several key issues and

¹⁷ One of the sources of funding is hydropower revenues. *Id.*

¹⁸ Prior to the GCDAMP, there was the U.S. Geological Survey fish program initiated in 1997 that was funded on average at approximately \$1.6 million per year for 25 years, or roughly \$40 million total. Additional effort and investment in humpback chub recover also occurred in the 1980s.

goals were identified in the LTEMP Final EIS, including protecting humpback chub and other native fishes.¹⁹

As stated above, the Secretary directed development of 2-4 operational alternatives that would fall within the scope of the LTEMP EIS and ROD. As described in the draft Strategy Plan (p. 10), implementation of short-term operational measures is necessary to prevent establishment of SMB while mid- and long-term actions are being developed and can be implemented in conjunction with other operational considerations that are currently being evaluated.

As explained in the DEA (p. 1-7), the implementation of the Proposed Action would occur only after and be consistent with the determination of annual flow volume based on the 2007 Interim Guidelines. In fact, it will be important for Reclamation and stakeholders to monitor and adapt activities related to SMB management to remain in alignment with updates and changes to operational decisions concerning annual releases from GCD to Lake Mead under the 2007 Interim Guidelines and applicable laws. That is, implementation of the Proposed Action over the next three years must be coordinated with existing and forthcoming decisionmaking in furtherance of operational guidance under the LTEMP as well as under current and future provisions of the Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operation of Lake Powell and Lake Mead. It will be necessary to ensure those decisions governing long-term operations are informed by additional environmental study and analysis, including information gained through implementation of the Proposed Action.

4. Upper Colorado River Endangered Fish Recovery Program

In addition to being consistent with the authorities that specifically govern GCD operations, the Proposed Action would complement the work being done to protect native fish elsewhere in the Basin, including the work of the Upper Colorado Endangered Fish Recovery

¹⁹ The DEA also incorporates by reference the complete list of “goals” in the LTEMP ROD, which are extensive, in many cases competing, and plainly more challenging to balance during periods of prolonged drought:

The LTEMP objectives addressed were (1) compliance with water allocation laws, regulations, and guidelines; (2) water delivery; (3) scope of flow and non-flow actions; (4) hydropower generation and capacity; (5) tribal interests; (6) use of the latest scientific findings; (7) adaptive management; and (8) compliance with Federal laws. The resource goals addressed were (1) archaeological and cultural resources; (2) natural processes; (3) humpback chub; (4) hydropower and energy; (5) other native fish; (6) recreational experience; (7) sediment; (8) tribal resources; (9) rainbow trout fishery; (10) nonnative invasive species; and (11) riparian vegetation. The full text of the objectives and resource goals is provided in Attachment A of this ROD. For the purposes of the EIS analysis, specific metrics were developed to objectively determine the relative performance of alternatives with regard to effects on resources; these are listed in Appendix B of the LTEMP FEIS.

Program.²⁰ That program serves the important function of “providing [ESA] compliance for water-related activities in the states of Colorado, New Mexico, Wyoming, and Utah.”²¹

The Upper Basin Fish Recovery Program has provided population-level benefits to humpback chub and other listed native fish species. As Commissioner Touton previously testified to the Senate’s Committee on Energy and Natural Resources, the programs have been important to the sustainable development of Upper Colorado River water supplies:

Actions taken by the Programs to recover the Colorado pikeminnow, humpback chub, razorback sucker, and bonytail meet ESA requirements for operation of federal multi-purpose projects, water projects benefiting the Tribes, and non-federal water projects. Activities and accomplishments of these Programs provide ESA compliance for more than 2,500 federal and non-federal water projects depleting approximately 3.7 million acre-feet per year in the Upper Colorado River and San Juan River Basins.

These two important recovery programs are intended to recover four species of endangered fish while allowing the states and Tribes to develop their full water entitlement and maintain compliance with interstate compacts and associated laws. Work focuses on four major areas:

1. Habitat management including providing and protecting instream flows;
2. Habitat development and maintenance, including fish ladders, fish screens, levee removal, and flooded bottomland restoration;
3. Augmentation and conservation of genetic integrity, development and operation of propagation facilities, and fish stocking; and
4. Management of non-native fish;

As evidence of the success of these Programs, the Fish and Wildlife Service recently reclassified the humpback chub from endangered to threatened on October 15, 2021 and proposed a similar reclassification for razorback sucker in July of 2021.²²

Implementation of the Proposed Action would help to reduce the cumulative threats non-native fish and habitat degradation pose to humpback chub and other listed species throughout

²⁰ Charles V. Stern and Pervaze A. Sheikh, “Congressional Research Service Report No. R45546: Management of the Colorado River: Water Allocations, Drought, and the Federal Role,” (Feb. 6, 2023), p. 12, available at <https://crsreports.congress.gov> (“Report No. R45546”).

²¹ Upper Colorado and San Juan River Basins Recovery Act, S. Rep. 117-174 (2022).

²² S. REP. 117-174 (Statement of Camille Camlimlim Touton, Commissioner, Bureau of Reclamation, Department of the Interior; emphasis added).

the Colorado Basin. This would in turn serve to protect the accomplishments of the Upper Basin Fish Recovery Program and other restoration activities being implemented in the Basin. By contrast, the No Action Alternative would likely contribute to the establishment of SMB below GCD and could undermine the benefit of past accomplishments and increase the costs required to achieve future successes in native species recovery.

C. Reclamation should identify the Proposed Action, Options B or D as the Preferred Alternative.

The Proposed Action incorporates four different flow options labeled A, B, C, and D. “The flow options incorporate releasing water from either the penstocks or the bypass tubes during certain months based on when temperatures at the Little Colorado River confluence reach or exceed 16 degrees Celsius (°C) and smallmouth bass would be expected to initiate spawning [citations omitted].” DEA, p. 1-4. In addition to generally supporting the Proposed Action, American Rivers specifically supports Flow Options B (Cool Mix with Flow Spikes) and D (Cold Shock with Flow Spikes), both of which include cold water releases *and* flow spikes.

1. Flow Option B would best achieve the project purpose and need.

The DEA (p. 2-4) describes Flow Option B as follows:

water would be released through the penstocks and bypass tubes to maintain a daily average water temperature below 16°C from below the dam to the Little Colorado River (RM 61), with the goal of disrupting smallmouth bass spawning. In addition, up to three 36-hour flow spikes would be added between late May and mid-July if sufficient water is available. The flow spike would likely disrupt spawning in margin habitats that may be warmer than the main stem river.

We support the DEA’s proposal (p. 2-1) that Reclamation would retain some discretion, in consultation with the GCDAMP and other stakeholders, as to which of the four Flow Options to implement based on environmental conditions existing at the time of implementation for a given release and adaptive management decisions. However, as described below, the information presented in the DEA and other available data shows Flow Option B is the superior operational alternative for spring 2023.

The DEA (p. 3-7) explains that Option B is “most likely” to achieve the purpose and need because it could prevent spawning in margin habitat:

Flow Option B would reduce the water temperature to below 16°C in the mainstem Colorado River, and the flow spikes would push cold water into the backwater habitats to prevent spawning or push male smallmouth bass off nests, if spawning has already occurred. *For these reasons, this option is most likely to meet the purpose and need.* (emphasis added).

It is important to note that there appears to be sufficient water to implement Option B this spring. More specifically, there is 523,000 AF of water from water year 2023 that was not moved downstream in the October - April time frame, but that must be moved downstream in the May - September time frame. The movement of this water could occur as part of the cold spikes found in Options B or D. This water is not water held in Lake Powell under Drought Response Operations Agreement; rather, it is re-timing the regular releases from that first time period to the later one.

For those reasons, we recommend Reclamation identify the Proposed Action, Option B as the preferred alternative, at least for purposes of 2023 (year 1) implementation.²³

While we support the DEA's finding that Flow Option B is most likely to achieve purpose and need, Flow Option D, which "would involve recurring cold shocks and recurring flow spikes," could also be effective in achieving the purpose and need. DEA, p. 3-9. These cold spikes under Options B and D would create more SMB dispersal (*see* DEA, p. 3-8) when SMB fry are young. Dispersal when fry are young makes survival less successful.

However, the reliability of the bypass tube water at the volumes needed and the timing of the release proposed under Option B (DEA, p. 2-5) appears better than Option D, which would have uncertainty regarding the availability of bypass versus penstock flows and so could be less effective given maintenance schedules and volumes of water, etc. (*id.* at 2-8). Further, the DEA states that Flow Option D could have additional impacts on macroinvertebrates: "the cold shocks of Flow Option D could lead to high rates of macroinvertebrate drift and potentially disrupt macroinvertebrate development and life cycles." *Id.*

2. Flow Options B and D would also promote tangential benefits to other important resources in the River.

The DEA expressly recognizes (p. 3.26) that, in addition to being most likely to achieve the project purpose and need, Flow Option B, as well as Flow Option D, would have beneficial impacts on sediment management, specifically beach building in Glen Canyon, under certain assumptions:

If the maximum magnitude is higher (approximately 40,000 cfs) and the duration is longer (72 hours), there is higher confidence of sediment benefits from a flow spike. If a flow spike occurs in May or June, it would not affect the potential for a fall [high flow experiment (HFE)] due to the sand budget accounting window constraints. The sandbar model predicts a greater than 50 percent increase in sandbar volume for a 40,000 cfs and

²³ See Reclamation's NEPA Handbook (Feb. 2012), available at <https://www.usbr.gov/nepa/>, p. 4-9. ("The draft NEPA document released for public review should include a preferred alternative. If this is not possible, it must be included in the final NEPA document. A preferred alternative identified in the final NEPA document should be within the range of alternatives analyzed in the draft NEPA document."). See also 40 C.F.R. § 1508.1(h); *Dine Citizens Against Ruining Our Env't v. Haaland*, 59 F.4th 1016, 1030 (10th Cir. 2023) ("[a]n agency can have a preferred alternative in mind when it conducts a NEPA analysis.").

72-hour flow spike, compared with approximately 14 percent for a single 32,000 cfs flow spike.²⁴

The positive impacts to sediment transport and the improvement to sandbars and beaches from B and D are significant. There has not been a HFE in the canyon since 2018, and as a result, there is extensive degradation and erosion of sandbars and beaches throughout the canyon, which inhibits both recreational benefits, but also ecological benefits for fish and invertebrate life. Additionally, without these high flows, vegetation has encroached on many beaches, crowding out available sand and again disrupting the balance that would have been maintained in the presence of these flows.

Lastly, cultural resources/archeological sites have begun to be exposed and damaged by the erosion or other removal of the protective sand layers. The flow spikes would deposit new, protective sand on these culturally important sites, better preserving them overall.

3. **Flow Option B would most likely achieve the project purpose while also seeking to minimize the killing of fish.**

As described in the DEA (p. 3-45), “[f]rom time immemorial, the Canyons, including Glen and Marble Canyons, and the Colorado and Little Colorado Rivers have ben sacred places for Native communities.” The potential taking of life under the Proposed Action was identified as a significant concern during tribal consultation. *Id.* at 3-44 -3-45.

Option B could potentially result in the taking of life: “Flow Options A and B are meant to stop spawning before it occurs, which means there would be no taking of life, but in backwater or margin habitats some mortality could occur under Option B if fish are moved off of nests.” *Id.* at 3-45. The DEA notes that work is underway to develop a memorandum of agreement “regarding nonnative fish management and flow actions [that] will put forth procedures for consultation to resolve any adverse effects on the TCPS;” however, in the meantime, “because Flow Options B-D would result in additional taking of life within the Canyons in excess of the present conditions under the LTEMP dam operations, they could contribute to negative cumulative impacts on Zuni culture.” *Id.* at 3-46.

American Rivers takes seriously the strong tribal perspective around the taking of life, and feel that in balance, Option B has the benefit of minimizing the loss of life, mainly centered around the disruption of spawning beds while being the most effective at minimizing the expansion of the SMB population without taking of life. If we delay or restrict the opportunity to effectively address this problem now, it would be highly likely that mechanical or chemical treatments would be required to suppress the expansion of the population, leading to a much greater and more impactful loss of life overall.

²⁴ See also *id.* at 3-51. Flow Option B would have “Negative and Positive” impacts on the LTEMP Resource Goal of sediment management: “Flow spikes would export sediment from Marble Canyon which could reduce the amount available for HFEs, but would contribute to beach building in Glen Canyon.” *Id.*

4. **Flow Options B and D would have beneficial impacts on riparian vegetation.**

The DEA (pp. 3-48 – 3-49) finds that, in addition to being most likely to achieve the project purpose and need, Flow Option B, as well as Flow Option D, would have beneficial impacts on riparian vegetation.²⁵ For example, the flow spikes under Flow Options B and D would “correspond with the timing of pre-dam seasonal flooding conditions and could provide benefits to riparian species that germinate in the late spring and early summer by aiding in seed dispersal and germination [citations omitted].” *Id.* at 3-49.

Frequent high flow experiments, or pulse flows, scour encroaching vegetation and keeping beaches and sandbars free of encroaching plants. Since no high flows have been conducted since 2018, many beaches and sandbars are severely overgrown with dense, strong, vegetation. Flow Options B or D would help address this problem.

5. **There would be negative impacts to hydropower generation under the Proposed Action and No Action Alternatives.**

It is undeniable that that the Proposed Action would likely have negative impacts on hydropower generation in spring 2023. *See* DEA, p. 3-50. We also share some of the concerns that have been raised regarding further reduction in hydropower generation this spring and summer, which is already limited by the ongoing drought and low levels in Lake Powell. However, the potential impacts to hydropower as a result of the Proposed Actions contemplated under the DEA would be limited in duration and measures could be implemented to effectively mitigate the impacts.

We disagree with the DEA’s finding that the No Action alternative would result in “no change” to hydropower and energy resources. As stated above, if no or insufficient action is taken to prevent establishment of SMB now, the costs to manage the population would likely increase exponentially in a short period of time. The additional management actions required to suppress or eradicate rather than prevent establishment of SMB could have more significant, long-term impacts on hydropower generation. The science shows it may be impossible to eradicate SMB from below the dam, resulting in irreparable impacts to humpback chub and other native aquatic species in the Colorado River Basin.

As explained by the U.S. Fish and Wildlife Service (FWS):

under conditions where SMB or other warm-water nonnative predatory species become established in the Grand Canyon the predation threats to federally listed species, like the HBC become greater. For Reclamation, to take no action due the cost alone would be counter to policy and strategy (U. S. Department of Interior 2020, 2021), with respect to the commonly documented invasion curve which describes the theoretical relationship

²⁵ *See also id.* at 3-52. Flow Options B and D could have “Positive” impacts on the LTEMP Resource Goal of riparian vegetation management: “Flow spikes could provide a higher water table for plants during summer months and better conditions for germination, but spike flows may desiccate or erode seedlings.”

between the area occupied, time since introduction, and the cost of prevention, eradication, containment, and long-term management (U. S. Department of Interior 2021). The cost to control SMB if no action is taken, are likely to grow exponentially beyond the estimates presented in Table 3-2 of the EA.²⁶

Western Area Power Administration (WAPA) and other stakeholders have expressed concern regarding the potential cost of replacement power.²⁷ However, as WAPA has noted, the financial impacts related to the increased cost of replacement power this summer could be mitigated with appropriations or other Reclamation funding sources.²⁸ The National Park Service (NPS) has further described opportunities to mitigate the costs of bypassing the generation units:

Our understanding is that there are several ways to reduce costs from the use of bypass. If more SMB are not discovered in the Grand Canyon in 2023 or outyears, but only in the Lees Ferry reach in Glen Canyon, then it may be possible to use less bypass to cool only the Glen Canyon reach portion of the river. As other decisions are made on water allocations for the year, such as how much water is retained in both Lake Powell and upstream reservoirs, it's possible that temperature may not rise as much below the GCD as currently predicted, and this will decrease the need for bypass thereby decreasing costs. The action alternative has several options to choose from with differing costs, and while we feel strongly that option B is the most efficient, the action alternative appears to allow adjustment if needed in a given year between options and could be one way to control costs, as long as Reclamation still chooses options that are efficient enough for the goal of preventing SMB establishment. Finally, our understanding is that if these operations are anticipated in power purchase contracts well in advance, then replacement power is much less expensive than if those contracts do not anticipate this action. Accordingly, there are several ways to control the costs of this action, but not taking this action is likely to cause many negative impacts to the native species below the dam.²⁹

Reclamation's implementation process for the Proposed Action should include development and implementation of measures to effectively mitigate impacts of GCD releases that forego power generation. There are multiple factors that have contributed to conditions favorable to SMB below GCD and the costs of management actions to address the problem should be allocated equitably, especially given the benefits of preventing SMB establishment will run to all Basin stakeholders.

Again, while the Proposed Action will likely have acute financial impacts this summer, not acting to prevent establishment of SMB below the dam would likely have much greater long-

²⁶ Letter from Heather Whitlaw to Reclamation Regional Director (Mar. 10, 2023), p. 3.

²⁷ See letter from Brian Sadler to Sarah Bucklin (Dec. 15, 2022), p. 2.

²⁸ *Id.*

²⁹ See letter from Brian Drapeaux to Wayne Pullan (Mar. 10, 2023), p. 5.

term costs in the form of decreased development activities and/or increased compliance burden for such activities, and pose a greater threat to the economic viability of the Basin Fund.

III. Conclusion

We request that Reclamation staff consider these comments in finalizing the EA and identify the Proposed Action, Option B as the preferred alternative. We look forward to working with Reclamation and other stakeholders to implement the Proposed Action in the short-term and to develop additional long-term measures that will prevent the establishment of SMB and other invasive species below GCD.

Respectfully submitted



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