2 March 2026

Bureau of Reclamation
Attn: BCOO-1000
P.O. Box 61470
Boulder City, NV 8900
Email: crbpost2026@usbr.gov

Re: Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead Draft Environmental Impact Statement

Responsible Officials:

The Center for Biological Diversity provides the following comments for the Bureau of Reclamation's (BOR) Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead – Draft Environmental Impact Statement (DEIS).

The central challenge for this EIS is to provide for "prudent management of the Colorado River Basin" amidst human-caused climate change, increasing temperatures and aridification, declining precipitation, river flows and storage, and supply-demand imbalance. No alternatives in the DEIS meet that purpose and need under dry or critically dry conditions. Because climate-driven flow declines are projected to worsen, and because there is no evidence that Upper and Lower Basin states can or will agree on a new framework for Colorado River management, the Department of the Interior, in this EIS, must provide a viable plan and contingencies for critically dry conditions facing the Colorado River Basin now and in the future. Under any alternative, this requires cutting consumptive use to align demand with supply.

Emergency measures are needed now to prevent nonnative fish entrainment through Glen Canyon Dam in 2026 and 2027, when the elevation of Lake Powell's pool is projected to remain within a range that is optimal for nonnative fish entrainment. A sustained period of nonnative fish entrainment increases the potential to rapidly and permanently reverse decades of humpback chub recovery progress in the Grand Canyon. Failure to control a smallmouth bass invasion, as from failure of river outlet works that precludes cool-mix flows, could quickly overwhelm population suppression efforts and push humpback chub to jeopardy by decimating its last source population in the Grand Canyon. Emergency modifications to Glen Canyon Dam and/or its forebay are needed now, late in the winter of 2026, to ensure against this outcome by preventing nonnative fish entrainment in the first place.

Next, the DEIS violates NEPA and other laws by failing to analyze *long-term* modifications to Glen Canyon Dam, as necessary to prevent entrainment of nonnative fish from Lake Powell into the Colorado River downstream on an ongoing basis. For more than a decade the Bureau of Reclamation has failed to implement "means of preventing the passage of deleterious invasive nonnative fish through the Glen Canyon Dam" as set forth in conservation measures in the 2016 Biological Opinion for the Glen Canyon Dam Long-Term Experimental and Management Plan. Now, a decade later, facing perilous entrainment risks from record-low pool elevations and inflows, Reclamation continues that failure in this DEIS.

Similarly, the DEIS violates NEPA and other laws by failing to analyze modifications to Glen Canyon Dam that are necessary for the provision of water downstream amidst climate-inevitable minimum and dead pool conditions at Lake Powell. These conditions, which are now foreseeable in the Bureau of Reclamation's own forecasts and are likely to continue with greenhouse gas emissions and ongoing regional aridification, will render Glen Canyon Dam obsolete by requiring use of river outlet works that were not engineered for long-term water releases. Minimum pool conditions require major structural modifications to Glen Canyon Dam to provide for the "prudent management of the Colorado River Basin (Basin)" that this EIS calls for but fails to analyze.

The FEIS must remedy these problems. It must analyze engineering solutions for the long-term provision of water through and downstream of Glen Canyon Dam during minimum power and dead pool conditions, including a plan for phased decommissioning; in that context and otherwise, it must provide for the survival and recovery of threatened and endangered species in Grand Canyon and Glen Canyon, upstream and downstream of Glen Canyon Dam; it must analyze and set forth a plan to address the loss of Glen Canyon Dam's hydropower electricity which, according to the Bureau's latest inflow projection, could occur by December of 2026 but is also a climate inevitability given ongoing greenhouse gas emissions and worsening regional aridification.

Finally, because management of Colorado River flows and storage at Lake Powell and Lake Mead will necessarily implicate management of flows, storage, and designated critical habitat for endangered species upstream and downstream in the Colorado River Basin, the Bureau of Reclamation must undertake corresponding NEPA analysis and consultation with the U.S. Fish and Wildlife Service to avoid jeopardy and ensure the survival and recovery of endangered species dependent on Colorado River flows. Our understanding from the DEIS is that a Biological Assessment for annual releases from Glen Canyon Dam will be completed in the spring of 2026, with a Biological Opinion issued before the final Record of Decision. This Biological Opinion will replace the existing 2007 and subsequent 2024 Interim Guidelines Biological Opinions (FWS 2007, 2024); the 2016 Glen Canyon Dam LTEMP Biological Opinion (FWS 2016), which considers monthly, daily, and hourly release volumes, will remain in effect. Bureau of Reclamation will continue to rely on the 2016 Biological Opinion for LTEMP for implementation of the Post-2026 Guidelines while also undertaking additional, new, Basin-wide

programmatic Endangered Species Act consultation in relation to Colorado River flows and storage.

1. **The Statutory Framework for Managing Colorado River Flows Requires the Department of the Interior to Protect and Conserve the Natural and Cultural Values of Grand Canyon National Park and Glen Canyon National Recreation Area. Hydropower is "Incident" and Subservient to Conservation Mandates.**

The Department of Interior (DOI) and BOR have multiple statutory mandates to manage flows from Glen Canyon Dam to protect, improve, and mitigate adverse impacts to federally endangered species and the natural and cultural values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established. Because hydropower cannot be prioritized above other purposes, and because it is explicitly "incident" to flows for other purposes, BOR has both the authority and obligation to manage Glen Canyon Dam to effectively conserve water and natural resources without the additional burden of prioritizing the provision of hydropower from the dam.

The Secretary of the Interior, acting through the Director of the National Park Service, must:

> promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose of the System units, which purpose is to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.

54 U.S.C. § 100101(a).

Further, and as discussed in detail below as it relates endangered speices, Section 7 of the Endangered Species Act requires that "[e]ach Federal agency shall, in consultation with and with the assistance of [the Services], insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification" of designated critical habitat. 16 U.S.C. § 1536(a)(2).

The regulations implementing the ESA define "jeopardize the continued existence of" as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably 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." 50 C.F.R. § 402.02. Pursuant to the ESA, BOR must ensure that flow regimes from Glen Canyon Dam are not likely to jeopardize the continued existence of humpback chub or other endangered species, result in

the destruction or adverse modification of its critical habitat in Grand Canyon National Park, or directly or indirectly reduce its reproduction, numbers, or distribution.

The Grand Canyon Protection Act of 1992 (GCPA) specifies that Glen Canyon Dam "shall" be operated in a manner that is protective of Grand Canyon National Park and Glen Canyon National Recreation Area:

> The Secretary shall operate Glen Canyon Dam … 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.

Grand Canyon Protection Act, Pub L. No. 102-575, § 1802(a), 106 Stat. 4669 (1992).

Pursuant to the GCPA, BOR must operate Glen Canyon Dam to protect, improve, and mitigate impacts to humpback chub and razorback sucker, and the riverine ecosystem upon which they depend and for which Grand Canyon National Park was established in part to protect. *See id.* The GCPA specifically mentions compliance with the Colorado River Storage Project Act of 1956 (Pub. L. No. 84-485) (CRSP), the law that authorized the construction of Glen Canyon Dam, in reference to water:

> The Secretary shall implement this section 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.

GCPA § 1802(b).

Regarding hydropower, the GCPA only discusses the need to replace Glen Canyon Dam's power with other power supplies. Through the GCPA, "the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established" were prioritized above Glen Canyon Dam's hydropower production:

> The Secretary of Energy in consultation with the Secretary of the Interior and with representatives of the Colorado River Storage Project power customers, environmental organizations and the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming shall identify economically and technically feasible methods of replacing any power generation that is lost through adoption of long-term operational

> criteria for Glen Canyon Dam as required by Section 1804 of this title. The Secretary shall present a report of the findings, and implementing draft legislation, if necessary, not later than two years after adoption of long-term operating criteria. The Secretary shall include an investigation of the feasibility of adjusting operations at Hoover Dam to replace all or part of such lost generation. The Secretary shall include an investigation of the modifications or additions to the transmission system that may be required to acquire and deliver replacement power.

GCPA § 1809.

Hydropower generation is "incident" to other purposes set forth in the CRSP, which authorized the Secretary of the Interior to "construct, operate, and maintain" Glen Canyon Dam:

> for the purposes, among others, of regulating the flow of the Colorado River, storing water for beneficial consumptive use, making it possible for the States of the Upper Basin to utilize, consistently with the provisions of the Colorado River Compact, the apportionments made to and among them in the Colorado River Compact and the Upper Colorado River Basin Compact, respectively, providing for the reclamation of arid and semiarid land, for the control of floods, and *for the generation of hydroelectric power, as an incident of the foregoing purposes*….

43 U.S.C. § 620 (emphasis added).

Thus, DOI and BOR have a clear responsibility to use Glen Canyon Dam to manage water according to the obligations in CRSP and GCPA. Because hydropower cannot be prioritized above other purposes under CRSP and GCPA, BOR has the authority and duty to manage Glen Canyon Dam to effectively conserve water and natural resources without the additional burden of providing hydropower from the dam.

BOR and DOI must fulfill the Secretary of Interior's obligation to operate the dam "in such a manner as to protect, mitigate adverse impacts to, and improve" Grand Canyon, and to operate the dam in such a way that does not reduce the reproduction, numbers, or distribution of federally threatened and endangered fish.

1. The DEIS Fails to Analyze Foreseeable Effects

NEPA requires federal agencies to "issue an environmental impact statement with respect to a proposed agency action requiring an environmental document that has a reasonably foreseeable significant effect on the quality of the human environment." 42 U.S.C. § 4336(b)(1). An agency may prepare an environmental assessment "if the significance of such effect is unknown." *Id.* § 4336(b)(2).

NEPA requirements for "major federal actions significantly affecting the quality of the human environment" include a detailed statement on:

(i) reasonably foreseeable environmental effects of the proposed agency action;

(ii) any reasonably foreseeable adverse environmental effects which cannot be avoided should the proposal be implemented;

(iii) a reasonable range of alternatives to the proposed agency action, including an analysis of any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative, that are technically and economically feasible, and meet the purpose and need of the proposal;

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and

(v) any irreversible and irretrievable commitments of Federal resources which would be involved in the proposed agency action should it be implemented.

Id. § 4332(C).

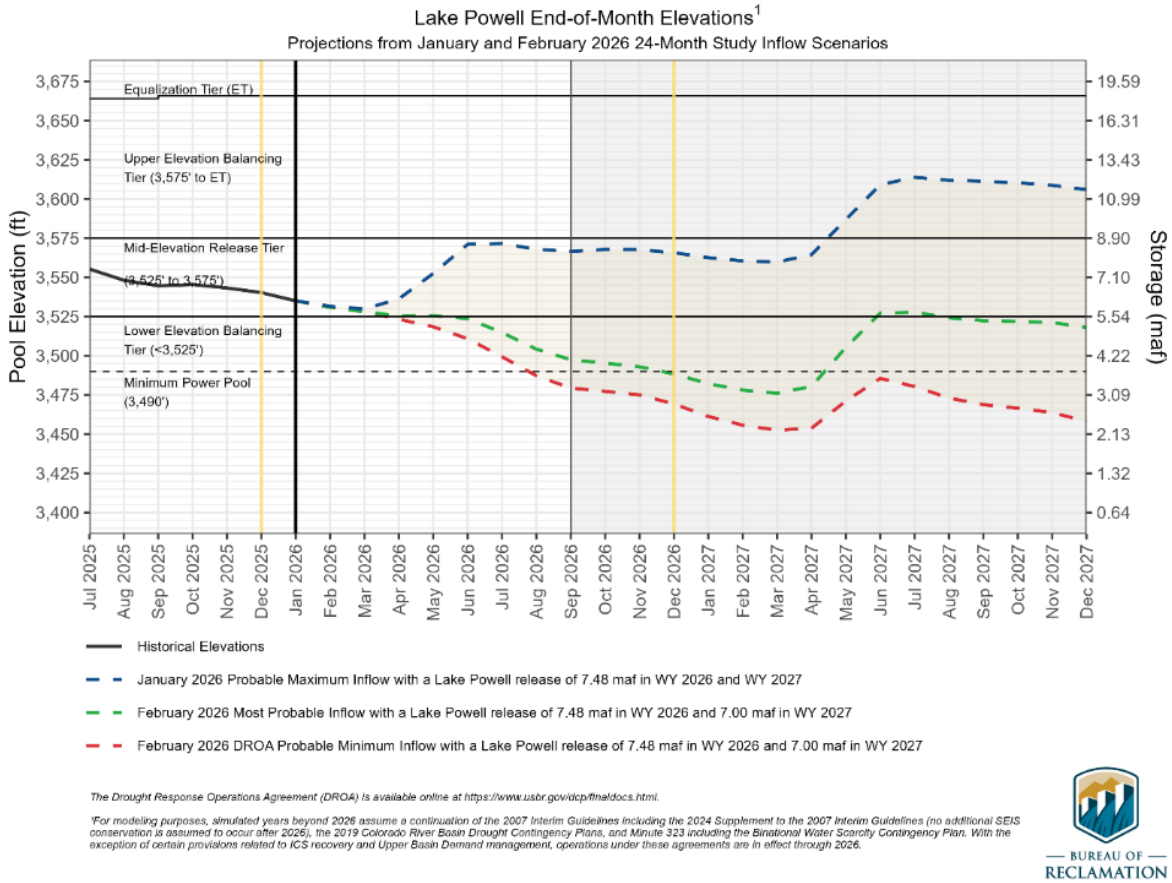
a. The DEIS Fails to Analyze Reasonably Foreseeable Effects Relating to Minimum Power Pool and Operational Limitations of Glen Canyon Dam's River Outlet Works

The DEIS fails to analyze minimum power at Lake Powell as reasonably foreseeable, in violation of NEPA. Bureau of Reclamation's February 2026 24-Month Study[1] of most probable inflow, whose chart is provided below, predicts reservoir elevations below minimum power pool (3490 ft) for five months, from December 2026 (3488 ft) through April of 2027 (3480 ft), reaching a low of 3476 ft in March. Under probable minimum inflows, reservoir elevations remain below minimum power pool after August 2026. Whether or not BOR enacts Drought Response Operation Agreement measures to protect certain pool elevations at Lake Powell does not change BOR's obligation to analyze the foreseeable effects relating to low reservoir and inflow conditions that are likely to persist and worsen on an ongoing basis.

Relatedly, the DEIS also fails to analyze operational limitations of Glen Canyon Dam under minimum power pool conditions that are projected by Bureau of Reclamation's February 2026 24-Month Study[2] of most probable inflow. Under minimum power pool conditions, water can only be released through Glen Canyon Dam through river outlet works. Operational guidance for the river outlet works acknowledges that they were not engineered for long-term

[1] https://www.usbr.gov/lc/region/g4000/riverops/24ms-projections.html
[2] https://www.usbr.gov/lc/region/g4000/riverops/24ms-projections.html

water release. Risks of structural damage like cavitation limit overall flow volume through the river outlet works, and maintenance and inspection requirements limit operation to only three of four river outlet works at one time. These operational limitations restrict the flexibility of water releases during minimum power pool conditions and limit release volumes to less than 7 million acre-feet. The EIS must analyze effects that would result from these limitations, including but not limited to natural resources for which Grand Canyon National Park and Glen Canyon National Recreation Area were established to protect, including threatened and endangered species and their designated critical habitat.



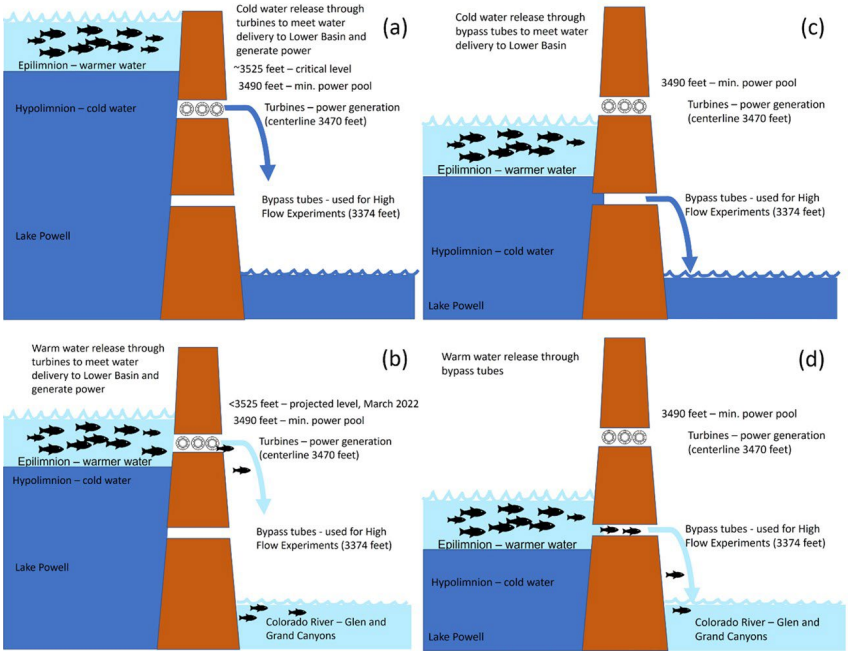
b. The DEIS Fails to Analyze Reasonably Foreseeable Effects of Nonnative Fish Entrainment Through Glen Canyon Dam in 2026 and 2027

The DEIS fails to analyze effects relating to sustained nonnative fish entrainment through Glen Canyon Dam in 2026 and 2027, which is reasonably foreseeable given the Bureau of Reclamation's February 2026 24-Month Study[3] of most probable inflow.

Projected Lake Powell pool elevations in 2026 and 2027 will cause a sustained period of nonnative fish entrainment through Glen Canyon Dam. Smallmouth bass entrainment increases

[3] https://www.usbr.gov/lc/region/g4000/riverops/24ms-projections.html

with decreasing reservoir elevation to 3490 ft, which is minimum power pool, after which the dam switches to deeper river outlets. The National Park Service schematic below demonstrates entrainment risk at penstocks (shown as "turbines") and river outlet works (shown as "bypass tubes"). As pool elevations decline further, entrainment resumes as river outlet works would draw from the epilimnion. Eppehimer et al. (2025)[4] project that entrainment increases below pool elevation of 3570 ft, and that rates of entrainment increase dramatically below 3530 ft. Friesen (2024)[5] found that, at 3543 ft, the risk of entrainment occurs in 95% of the traces evaluated. Reclamation's February 2026 Most Probable 24-Month Study for Lake Powell[6] forecasts pool elevations below 3530 ft for 22 months, from March of 2026 through the forecast horizon of January 2028. Entrainment would be interrupted during minimum power pool conditions, from December 2026 to April 2027, where pool elevations fall below 3490', resuming in May 2027 and continuing through January 2028. Under the Minimum Probable Inflow, entrainment would persist until minimum power pool is reached in August 2026 and persists thereafter, through January 2028.



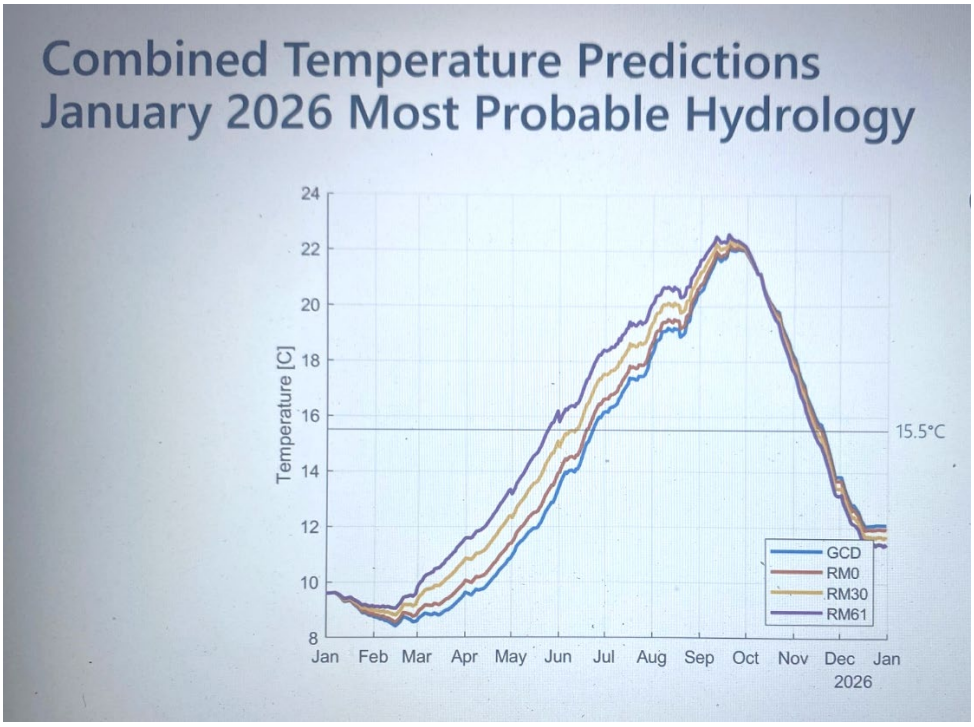
Entrainment of smallmouth bass and other nonnative fish is projected to be accompanied by a prolonged period of warm river water temperatures at Glen Canyon Dam downstream

[4] Eppehimer, D.E. et al., "Declining reservoir elevations following a two-decade drought increase water temperatures and non-native fish passage facilitating a downstream invasion" (2025), available at https://gcdamp.com/images_gcdamp_com/d/d4/Eppehimer_etal_2025_Declining_res_elevations_non-native_fish_passage_CJFAS.pdf.

[5] Friesen, Barrett T., 2024, "Invasion Potential of Nonnative Fishes Through a Large Western Dam Into a Prized and Vulnerable Ecosystem." Available at: https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1304&context=etd2023

[6] See: https://www.usbr.gov/lc/region/g4000/24mo_MIN.pdf

through River Mile 61. According to modeling data presented by BOR the February Technical Working Group meeting in the schematic below, water temperatures across this entire reach are predicted to exceed the 15.5 C threshold for smallmouth bass reproduction from Glen Canyon Dam downstream to River Mile 61 from May and June through late November of 2026. Even with cool-mix flows, entrainment of more invasive nonnative fish imposes ongoing burdens on agencies to continue mechanical removals and needlessly increases risks of smallmouth bass population expansion beyond the downstream reach of those flows. To the extent those risks can be avoided with fish barriers or other measures to block entrainment, they should be.



2. No Alternatives Meet the Purpose and Need Under Dry and Critically Dry Conditions. The DEIS Must Analyze a Reasonable Range of Alternatives and Measures to Mitigate Impacts

To comply with NEPA, BOR's environmental document must "study, develop, and describe technically and economically feasible alternatives." 42 U.S.C. § 4332(2)(F). Further, NEPA requires BOR to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." *Id.* § 4332(H); *see Calvert Cliffs' Coordinated Comm. v. Atomic Energy Comm'n,* 449 F.2d 1109, 1141 (D.C. Cir. 1971) ("To ensure that the balancing analysis is carried out and given full effect, [NEPA] Section 102(2)(C) requires that responsible officials of all agencies prepare a 'detailed statement' covering the impact of particular actions on the environment, the environmental costs which might be avoided, and alternative measures which might alter the cost-benefit equation."), *cert. denied*, 404 U.S. 942 (1972). The purpose and need statement dictates the range of alternatives and what is "reasonable" depending on the purpose

and need for the proposed action. The broader the purpose and need statement, the broader the range of alternatives that must be analyzed.

In this context, BOR must also analyze measures to mitigate impacts. The Supreme Court has recognized that EISs must analyze and discuss mitigation measures because doing so is "implicit" in the requirements of NEPA itself:

> [O]ne important ingredient of an EIS is the discussion of steps that can be taken to mitigate adverse environmental consequences. The requirement that an EIS contain a detailed discussion of possible mitigation measures flows … from the language of [NEPA] …. Implicit in NEPA's demand that an agency prepare a detailed statement on "any adverse environmental effects which cannot be avoided should the proposal be implemented," 42 U.S.C. § 4332(C)(ii), is an understanding that the EIS will discuss the extent to which adverse effects can be avoided. More generally, omission of a reasonably complete discussion of possible mitigation measures would undermine the "action-forcing" function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects. An adverse effect that can be fully remedied by, for example, an inconsequential public expenditure is certainly not as serious as a similar effect that can only be modestly ameliorated through the commitment of vast public and private resources.

Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 351-52 (1989).

Here, no alternatives analyzed meet the purpose and need under dry and critically dry conditions now underway

and worsening with regional aridification. Absent alternatives to modify Glen Canyon Dam to safely bypass water amidst reasonably foreseeable minimum power pool conditions, no alternatives meet the purpose and need.

The purpose and need of the DEIS is to provide:

> Prudent management of the Colorado River Basin (Basin)…. because the Colorado River is the foundation for diverse resources across a large geographic region and faces exceptional challenges from prolonged drought and future uncertainty.

DEIS at 1-1.

The DEIS states that alternatives capture a broad range of alternatives with various tradeoffs if drought conditions improve, but that:

> If conditions do not improve, achieving a balance is more difficult, and, under critically dry futures, even large and unprecedented reductions may not be enough to stabilize storage.

DEIS at 1-2.

To comply with NEPA and other laws, the EIS must "study, develop, and describe technically and economically feasible alternatives" that provide for "prudent management of the Colorado River Basin," including for the survival and recovery of endangered species under foreseeable minimum power pool conditions and "critically dry futures" of regional aridification and declining river flows.

a. The DEIS Must Analyze Immediate Emergency and Long-Term Measures to Prevent Entrainment of Nonnative Fish Through Glen Canyon Dam

A two-year entrainment event, which is now foreseeable given current and BOR's projections of pool elevations, increases the potential to overwhelm nonnative fish population suppression efforts downstream of the dam and foreclose humpback chub recovery by decimating its last large source population in the Grand Canyon.

The DEIS must analyze and provide immediate (emergency, now) and measures to prevent entrainment of nonnative fish through Glen Canyon Dam into critical habitat for humpback chub and razorback sucker in the Colorado River downstream.[7] Emergency options that can be deployed now, even temporarily, include electric barriers and nets. Long-term measures may include any combination of in-reservoir barriers and in-dam options, and must prevent entrainment in the penstocks and, when needed, river outlet works.

The DEIS must analyze how measures to prevent entrainment would increase operational flexibility for the benefit of natural resources, including endangered species, upstream and downstream of the dam in Grand Canyon National Park. For example, measures to prevent entrainment would allow warmer flows from lower pool elevations to benefit humpback chub growth rates. At the same time, Glen Canyon National Recreation Area, where such flows including newly emergent riparian portions thereof.

Failure to analyze measure to prevent nonnative fish entrainment violates NEPA's requirement to analyze and mitigate foreseeable environmental effects, violates the Grand Canyon Protection Act's mandate to provide for "the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established," and violates the Endangered Species Act's requirement for federal agencies to avoid jeopardy and ensure the survival and recovery endangered species.

[7] See, for example: https://www.usbr.gov/uc/progact/amp/twg/2022-10-13-twg-meeting/20221013-GlenCanyonDamFishEscapementOptions-508-UCRO.pdf

b. The DEIS Must Analyze Alternatives to Implement LTEMP Biological Opinion Conservation Measures to Prevent Nonnative Fish Entrainment

Relatedly, the EIS must analyze alternatives to implement the conservation measures in the U.S. Fish and Wildlife Service's Biological Opinion for the Glen Canyon Dam Long-Term Experimental and Management Plan (LTEMP) (2016) to "pursue means of preventing the passage of deleterious invasive nonnative fish through the Glen Canyon Dam." Under this Biological Opinion, BOR must:

> pursue means of preventing the passage of deleterious invasive nonnative fish through Glen Canyon Dam. Because Glen Canyon Dam release temperatures are expected to be warmer under low reservoir elevations that may occur through the LTEMP period, options to hinder expansion of warmwater nonnative fishes into Glen and Grand Canyons would be evaluated. Potential options to minimize or eliminate passage through the turbine or bypass intakes, or minimize survival of nonnative fish that pass through the dam would be assessed (flows, provide cold water, other). While feasible options may not currently exist, technology may be developed during the LTEMP period that could help achieve this goal. The regulation and control of nonnative fish is a management action identified in the Humpback Chub Recovery Goals (USFWS 2002a) and Razorback Sucker Recovery Goals (USFWS 2002b).

Biological Opinion at E-12.

Analysis of alternatives to implement LTEMP conservation measures to "pursue means of preventing the passage of deleterious invasive nonnative fish through the Glen Canyon Dam" is important not only for preventing entrainment of nonnative fish through Glen Canyon Dam in the first place, but also for preventing the need for mechanical, chemical, or other forms of nonnative fish removal that are inconsistent with our understanding of the cultural values of the affiliated Grand Canyon Tribes.

Failure to analyze alternatives to implement the conservation measures in the 2016 LTEMP Biological Opinion to prevent passage of deleterious invasive nonnative fish through the Glen Canyon Dam violates NEPA's requirement to analyze and mitigate foreseeable environmental effects and a reasonable range of alternatives, violates the Grand Canyon Protection Act's mandate to provide for "the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established," and violates the Endangered Species Act's requirement for federal agencies to avoid jeopardy and ensure the survival and recovery endangered species.

c. The DEIS Must Analyze Alternatives for Glen Canyon Dam Bypass and Decommissioning and Measures to Mitigate Impacts

As the Center discussed in scoping comments, ongoing regional aridification and Colorado River flow declines require BOR to develop plans now for minimum power and dead pool conditions at Lake Powell, and Glen Canyon Dam obsolescence, during the horizon of this planning process. BOR must plan now for decommissioning Glen Canyon Dam and analyze a range of corresponding engineering alternatives for doing so. The Bureau must ensure that all engineering alternatives for decommissioning Glen Canyon Dam are designed to prevent passage of non-native fish into the Colorado River in Grand Canyon National Park. BOR's failure to provide *any* alternative in the DIES that meets the purpose and need amidst critically dry conditions demonstrates the need for such analysis.

As discussed above, under minimum power or dead pool conditions, water can only be released through Glen Canyon Dam through river outlet works. Operational guidance for the river outlet works acknowledges that they were not engineered for long-term water release. Risks of structural damage like cavitation limit overall flow volume through the river outlet works, and maintenance and inspection requirements limit operation to only three of four river outlet works at one time. These operational limitations restrict the flexibility of water releases through river outlet works during minimum power pool conditions to volumes less than 7 million acre-feet. These problems preclude reliable operation of Glen Canyon Dam during minimum power pool and dead pool conditions, and risk structural damage during cool-mix flows, which rely on river outlet works.

The Bureau of Reclamation must plan now for the climate obsolescence of Glen Canyon Dam and Lake Powell, and it must analyze measures to mitigate impacts. This includes analyzing plans for replacement power, a phased decommissioning of the dam, and associated engineering solutions that will prevent nonnative fish invasion, maintain Grand Canyon as a native fish stronghold in the Colorado River system, and provide for the survival and recovery of endangered fish in Glen Canyon National Recreation Area and Grand Canyon National Park.

The DEIS's failure to provide such analysis of alternatives violates NEPA's requirement to analyze foreseeable environmental effects and a reasonable range of alternatives, violates the Grand Canyon Protection Act's mandate to provide for "the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established," and violates the Endangered Species Act's requirement for federal agencies to avoid jeopardy and ensure the survival and recovery endangered species.

3. **BOR Must Analyze Connected Actions in One EIS**

NEPA requires federal agencies to consider connected actions together in a single EIS. *See* 42 U.S.C. 4332(2)(C); *see also Kleppe v. Sierra Club*, 427 U.S. 390, 409–10 (1976) ("A comprehensive impact statement may be necessary in some cases for an agency to meet [its NEPA] duty. Thus, when several proposals for coal-related actions that will have cumulative or

synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together.").

Actions are connected if they (i) automatically trigger other actions which would require additional environmental documents; (ii) cannot or will not proceed unless other actions are taken previously or simultaneously; or (iii) are interdependent parts of a larger action and depend on the larger action for their justification. *Citizens' Comm. to Save Our Canyons v. U.S. Forest Serv.*, 297 F.3d 1012, 1028 (10th Cir. 2002); *see also* U.S. Dep't of the Interior Handbook of NEPA Implementing Procedures § 6.1(g) (same definition). In determining whether actions are "connected," courts examine whether the actions have "independent utility" or whether it would be "irrational, or at least unwise, to undertake the first phase if subsequent phases were not also undertaken." *Daly v. Volpe*, 514 F.2d 1106, 1110 (9th Cir. 1975).

By requiring comprehensive assessment of related actions, NEPA ensures agencies cannot impermissibly segment or piecemeal NEPA analysis of federal actions.

Because management of Colorado River flows and storage at Lake Powell and Lake Mead will necessarily control and be controlled by management of flows, storage, endangered species, and invasive species upstream and downstream in the Colorado River Basin through the operations of Hoover Dam, Glen Canyon Dam, Flaming Gorge Dam, Blue Mesa Dam, Navajo Dam, and others. Together, these are interdependent parts of the Bureau of Reclamation's larger action of Colorado River flows and storage that must be analyzed under a single EIS. Just as the DEIS promises a Basin-wide programmatic Endangered Species Act consultation in relation to Colorado River flows and storage, so too must Bureau of Reclamation undertake a commensurate singular analysis under NEPA.

4. BOR Must Comply with the Endangered Species Act

Recognizing that certain species of plants and animals "have been so depleted in numbers that they are in danger of or threatened with extinction," Congress enacted the ESA to provide both "a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, [and] to provide a program for the conservation of such endangered species and threatened species." 16 U.S.C. § 1531. The ESA reflects "an explicit congressional decision to afford first priority to the declared national policy of saving endangered species." Tenn. Valley Auth. v. Hill, 437 U.S. 153, 185 (1978). "The plain intent of Congress in enacting this statute was to halt and reverse the trend toward species extinction, whatever the cost." *Id.* at 184. As such, the ESA "represent[s] the most comprehensive legislation for the preservation of endangered species ever enacted by any nation." *Id*. at 180.

Section 9 of the ESA makes it unlawful for any person to "take" an endangered or threatened species without express authorization from FWS. 16 U.S.C. § 1538(a)(1). "Take" means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 16 U.S.C. § 1532(19). The term "harm" is further defined by FWS

regulations to encompass "habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." 50 C.F.R. § 17.3. FWS's regulations define "harass[ment]" as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering." *Id.*

Section 7(a)(2) of the ESA requires all federal agencies to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species." 16 U.S.C. § 1536(a)(2). To carry out this obligation, before undertaking any action that may have direct or indirect effects on listed species, an action agency must engage in consultation with FWS in order to evaluate the impact of the proposed action. See *id*. FWS has defined the term "action" for the purposes of Section 7 broadly to mean "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies," 50 C.F.R. § 402.02, "in which there is discretionary federal involvement or control," *id*. § 402.03.

The purpose of consultation is to ensure that the action at issue "is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [designated] habitat of such species." 16 U.S.C. § 1536(a)(2). As defined by the ESA's implementing regulations, an action will cause jeopardy to a listed species if it "reasonably would be expected, directly or indirectly, to reduce appreciably 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." 50 C.F.R. § 402.02. Under those same regulations, an action will destroy or adversely modify critical habitat if it will cause a "direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species." *Id.* Thus, during consultation the action agency and FWS must consider, in evaluating the effects to the species and its critical habitat, whether "the agency action will [] appreciably reduce the odds of success for future recovery planning, by tipping a listed species too far into danger." *Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv*., 524 F.3d 917, 936 (9th Cir. 2008). The evaluation of the effects of the proposed action on listed species and their habitat (including critical habitat) during consultation must use "the best scientific . . . data available." 16 U.S.C. § 1536(a)(2).

Consultation under Section 7(a)(2) may be "formal" or "informal" in nature. Informal consultation is "an optional process" consisting of all correspondence between the action agency and FWS, which is designed to assist the action agency, rather than FWS, in determining whether formal consultation is required. See 50 C.F.R. § 402.02. During an informal consultation, the action agency requests information from FWS as to whether any listed species may be present in the action area. If listed species may be present, Section 7(c) of the ESA requires the action agency to prepare and submit to FWS a "biological assessment" ("BA") that evaluates the potential effects of the action on listed species and critical habitat. Formal consultation does not

begin until the action agency submits the BA to FWS. 50 C.F.R. § 402.14(c)(3). As part of the BA, the action agency must make a finding as to whether the proposed action may affect listed species and submit the BA to FWS for review and potential concurrence with its finding. 16 U.S.C. § 1536(c). If the action agency finds that the proposed action "may affect, but is not likely to adversely affect" any listed species or critical habitat, and FWS concurs with this finding (i.e., a "no-adverse-effect" determination), then the consultation process is terminated. 50 C.F.R. § 402.14(b).

On the other hand, if the action agency finds that the proposed action "may affect" listed species or critical habitat by having any adverse effect that is not insignificant or discountable, then formal consultation is required. See 50 C.F.R. § 402.11. Following completion of the BA, the action agency must initiate formal consultation through a written request to FWS. See 50 C.F.R. § 402.14(c). The result of a formal consultation is the preparation of a BiOp by FWS, which is a compilation and analysis of the best available scientific data on the status of the species and how it would be affected by the proposed action. When preparing a BiOp, FWS must: (1) "review all relevant information;" (2) "evaluate the current status of the listed species;" and (3) "evaluate the effects of the action and cumulative effects on the listed species or critical habitat." 50 C.F.R. § 402.14(g). As such, a BiOp must include a description of the proposed action, a review of the status of the species and its designated critical habitat, a discussion of the environmental baseline, and an analysis of the direct and indirect effects of the proposed action and the cumulative effects of reasonably certain future state, tribal, local, and private actions. *Id.*

At the end of the formal consultation process, FWS issues either a no-jeopardy or a jeopardy BiOp. With a no-jeopardy BiOp, FWS determines that the proposed action is not likely to jeopardize the continued existence of listed species or adversely modify critical habitat. If, as part of a no-jeopardy BiOp, FWS determines that the proposed action will nevertheless result in the incidental taking of listed species, then FWS must provide the action agency with a written ITS specifying the "impact of such incidental taking on the species" and "any reasonable and prudent measures that [FWS] considers necessary or appropriate to minimize such impact" and setting forth "the terms and conditions . . . that must be complied with by the [action] agency . . . to implement [those measures]." 16 U.S.C. § 1536(b)(4). Take in excess of that authorized by the ITS violates the prohibition on take contained in Section 9 of the ESA. *Id.* § 1538. With a jeopardy BiOp, FWS determines that the proposed action will jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. In a jeopardy BiOp, FWS may offer the action agency reasonable and prudent alternatives to the proposed action that will avoid jeopardy to a listed species or adverse habitat modification, if they exist. *Id.* § 1536(b)(3)(A).

Where a BiOp has been issued and "discretionary Federal involvement or control over the action has been retained or is authorized by law," the action agency is required to reinitiate consultation with FWS in certain circumstances, including: (1) "[i]f the amount or extent of taking specified in the [ITS] is exceeded"; (2) "[i]f new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously

considered"; (3) "[i]f the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered" in a prior consultation; or (4) "[i]f a new species is listed or critical habitat designated that may be affected by the identified action." 50 C.F.R. § 402.16(a).

The ESA provides that agencies must hold action in abeyance until any legally required consultation is complete. Section 7(d) of the ESA prohibits an action agency from making "any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate [Section 7] (a)(2)." 16 U.S.C. § 1536(d). "This prohibition . . . continues until the requirements of section 7(a)(2) are satisfied." 50 C.F.R. § 402.09. The purpose of this requirement is to ensure that the status quo will be maintained during the consultation process. See *Lane Cty. Audubon Soc'y v. Jamison*, 958 F.2d 290, 294 (9th Cir. 1992) ("In order to maintain the status quo, section 7(d) forbids 'irreversible or irretrievable commitment of resources' during the consultation period.").

Our understanding from the DEIS is that a Biological Assessment for annual releases from Glen Canyon Dam will be completed in the spring of 2026, with a Biological Opinion issued before the final Record of Decision. This Biological Opinion will replace the existing 2007 and subsequent 2024 Interim Guidelines Biological Opinions (FWS 2007, 2024); the 2016 Glen Canyon Dam LTEMP Biological Opinion (FWS 2016), which considers monthly, daily, and hourly release volumes, will remain in effect. Bureau of Reclamation will continue to rely on the 2016 Biological Opinion for LTEMP for implementation of the Post-2026 Guidelines while also undertaking additional, new, Basin-wide programmatic Endangered Species Act consultation in relation to Colorado River flows and storage.

In the context of the 2016 Glen Canyon Dam LTEMP Biological Opinion, given new information about the foreseeability of minimum power pool conditions and an extended period of nonnative fish entrainment in 2026 and 2027, we urge BOR, FWS, and NPS to immediately implement conservation measures therein, such as electric fences and nets, to prevent passage of nonnative fish through Glen Canyon Dam starting now. In the context of that biological opinion and the forthcoming Basin-wide programmatic Endangered Species Act consultation in relation to Colorado River flows and storage, BOR, FWS, and must undertake planning now to ensure the survival, and recovery of threatened and endangered fish in the context of minimum power pool, dead pool, and a warm Colorado River flowing through Grand Canyon. Worsening greenhouse gas pollution, regional warming, aridification, and Colorado River flow declines provide little assurance that Glen Canyon Dam will remain operable in a way that can protect endangered species and their critical habitat.

BOR and its sister agencies' duty to "carry out programs for the conservation"—i.e., recovery of listed species, should compel planning now to ensure for the survival and recovery of threatened and endangered fish. This must include planning for the climate inevitable

obsolescence of Glen Canyon Dam and Lake Powell, and, in that context, it must provide for replacement power, a phased decommissioning of the dam, and associated engineering solutions that will exclude non-native fish invasion, maintain Grand Canyon as a native fish stronghold in the Colorado River system, and provide for the survival and recovery of endangered fish in the Colorado River in Glen Canyon National Recreation Area and Grand Canyon National Park.

Thank you for your consideration. Please don't hesitate to contact me with questions.

Sincerely,

Taylor McKinnon
Southwest Director
Center for Biological Diversity
P.O. Box 710
Tucson, AZ 85702-0710
(801) 300-2414
tmckinnon@biologicaldiversity.org