April 13, 2020

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RE: Comments on the Draft Environmental Impact Statement for the Columbia River System
Federal Operations

Trout Unlimited (TU) appreciates the opportunity to provide comments on the U.S. Army Corps of Engineers (Corps), Bureau of Reclamation (BOR) and Bonneville Power Administration’s (BPA) (collectively, “Action Agencies”) Draft Environmental Impact Statement (DEIS) for the Columbia River System Operations (CSRO). TU is a non-profit organization with a mission to conserve, protect and restore North America’s coldwater fisheries and their watersheds. With more than 300,000 members and supporters nationwide and more than 14,000 members in the Columbia basin states, TU works to restore wild trout, salmon, and steelhead and their watersheds throughout the U.S.

TU has long considered it a priority to ensure the restoration of the Columbia basin’s great runs of salmon and steelhead. As it stands, however, the wild salmon and steelhead of the Snake River Basin are headed for extinction. The same insufficient proposals that have precipitated massive declines in runs have not – and will not – make any meaningful change. Decisive action must be taken. The four Lower Snake River Dams (LSRD) are not the only problem, but they are a very immediate and significant problem. An effort to save wild, anadromous fish in the Snake River begins with serious consideration of the removal of Ice Harbor, Lower Monumental, Little Goose and Lower Granite dams and identification of alternative ways to meaningfully replace the values they provide. To that end, TU offers comments on the DEIS with the hope that it will spur the Action Agencies to reconsider their current path which only serves to cloak the region in
perpetual uncertainty and conflict all while the Northwest’s iconic fish populations continue a slow march to extinction.

I. INTRODUCTION

It has been over 25 years since Snake River sockeye were listed under the Endangered Species Act (ESA); an event that was followed by the listings of twelve additional runs of Columbia and Snake River salmon and steelhead. These runs remain ESA-listed and status reviews released in 2016 found a familiar suite of causes impeding their recovery, including that they must navigate the extensive system of hydroelectric dams, powerhouses and reservoirs that comprise the Federal Columbia River Power System (FCRPS). Consequently, the status reviews recommended no change in status for any of the listed runs. Over the past 25 years, the National Marine Fisheries Service (NMFS) has issued eight separate biological opinions for the FCRPS; all but two have been declared legally inadequate in federal court, the most recent invalidated in May 2016.

Despite significant resources (both money and manpower) spent to implement the measures contained in the overturned plans, mostly in the form of habitat restoration projects, the alarming downward trajectory of Columbia basin’s imperiled salmonids has failed to reverse. New solutions are needed. A repackaging of previous strategies that haven’t delivered results for salmon and steelhead populations is no longer enough. Larger scale actions with the potential to address major causes of mortality in the system and substantially boost smolt-to-adult (SAR) survival rates is required. The National Environmental Policy Act (NEPA) process presented an opportunity for the Action Agencies to think big and comprehensively consider alternatives with the potential to restore healthy, resilient and fishable populations of naturally reproducing

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1 See 5-Year Review: Summary and Evaluation of Snake River Sockeye, Snake River Spring-Summer Chinook, Snake River Fall-Run Chinook, Snake River Basin Steelhead, National Marine Fisheries Service West Coast Region (2016); see also 5-Year Review: Summary and Evaluation of Lower Columbia River Chinook Salmon, Columbia River Chum Salmon, Lower Columbia River Coho Salmon, Lower Columbia River Steelhead, National Marine Fisheries Service West Coast Region (2016).

2 Since the first ESA listing of Snake River sockeye in 1991, NOAA Fisheries has issued eight separate biological opinions: 1992 (challenged and upheld); 1993 (concluding that the operations of the FCRPS would not jeopardize the listed species, but rejected by U.S. District Judge Malcolm Marsh); 1995 (challenged and upheld) 2000 (finding jeopardy and superseding previous BiOps, but rejected by U.S. District Judge James Redden); 2004, 2008 and 2010 supplemental BiOp (all rejected by Judge Redden); and 2014 supplemental BiOp (now rejected by Judge Simon).

salmon and steelhead, meet legal requirements, and – more important – provide substantial benefits for Columbia Basin communities and the region’s economy.

Unfortunately, the Action Agencies chose to structure their NEPA analysis around a narrow purpose and need statement with vague objectives that facilitated the selection of a preferred alternative that does not even provide reasonable assurance that listed salmonids will avoid extinction. This approach fails to recognize that ESA obligations include ensuring that the preferred alternative does not diminish a species’ prospects for survival and recovery. Additionally, while meeting the legal requirements of ESA is mandatory and critically important, the major benefits to people will only be realized if healthy, resilient and fishable salmon and steelhead populations are recovered. This higher level of recovery, measured by abundance, diversity and resilience, has been embraced by the Columbia Basin Partnership (CBP) and considers both the health of the fish and what is necessary to meet the social, legal, tribal and cultural objectives that will have a profound positive impact on peoples’ lives.4

The DEIS skirts the opportunity to apply good science, good economics and good planning to identify a pathway that meets the needs of fishing-dependent communities and tribes and unifies Columbia Basin stakeholders and communities around a common future vision. In so doing, the Action Agencies’ not only decline to exercise leadership around this issue, but also produce a plan that is, yet again, legally deficient. Regardless of the outcome of this NEPA process, it remains necessary that affected stakeholders work together to forge a comprehensive solution that restores abundant salmon, invests in local businesses and communities and ensures clean, affordable power into the future. As noted above, a serious look at LSDR as well as alternative mechanisms to provide their benefits is required. Time is running out on solutions to ensure that Columbia basin’s iconic salmon and steelhead runs persist for future generations. TU remains optimistic that, with committed stakeholders and bold political leadership, an effective,

4 The Columbia Basin Partnership (CBP) is a diverse group of 31 Columbia Basin stakeholders and sovereigns, including representatives of the four Columbia Basin states, tribes, ports, public power entities, irrigators, commercial and recreational fishers and conservationists. The work of the CBP including its Phase 1 Recommendations can be found at: https://www.fisheries.noaa.gov/west-coast/partners/columbia-basin-partnership-task-force. This same concept has been articulated by the National Marine Fisheries Service (NMFS) as “broad sense recovery” and is defined in recovery plans as “goals [that] go beyond the requirements for delisting under the ESA to address other legislative mandates, tribal treaty and trust responsibilities, and social, cultural, ecological, or economic benefits of having healthy, diverse salmon populations.” See ESA Recovery Plan for Snake River Fall Chinook Salmon, National Marine Fisheries Service, November 2017.
durable and scientifically defensible path forward can be achieved; one that not only ensures healthy, resilient and fishable Columbia basin fish runs but also maintains important functions provided by the FCRPS.

II. DISCUSSION
   a. The DEIS does not meet the legal requirements of NEPA.

   The Action Agencies prepared this DEIS “to review and update operations, maintenance, and configuration of the 14 CRS multiple purpose dams and related facilities….,” DEIS, Executive Summary, p.7. “Section 101 of NEPA declares a broad national commitment to protecting and promoting environmental quality.” In furtherance of this commitment, NEPA requires federal agencies to analyze the environmental impact of their proposed actions by preparing environmental impact statements for actions “significantly” affecting the environment. The purpose of this requirement is to assure that agencies take a “‘hard look’ at environmental consequences,” and “provide for broad dissemination of relevant environmental information.” All impacts must be considered, whether direct, indirect, or cumulative, so long as they are reasonably foreseeable.

   The DEIS is legally insufficient because it: a) fails to clearly articulate what “best available science” is informing its effects determinations and selection of a preferred alternative; b) fails to adequately analyze the impacts and benefits of the proposed alternatives on aquatic resources and c) articulates a preferred alternative that is likely to jeopardize the continued existence and recovery of listed salmonids and is therefore inconsistent with existing laws. TU’s comments on specific DEIS sections are included below.

   i. The Vague Purpose and Need Statement and Accompanying Objectives Guiding the DEIS Analysis Enable the Selection of a Legally Inadequate Preferred Alternative

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8 See 42 U.S.C. § 4332(2)(C); 40 C.F.R. §§ 1508.7, 1508.8.
The vague objectives accompanying the purpose and need statement misguide the DEIS analysis from the beginning resulting in selection of a preferred alternative that is inconsistent with ESA requirements and the direction articulated by the *National Wildlife Federation v. National Marine Fisheries Service* court (hereinafter “Court”).  

NEPA requires federal agencies to articulate the “purpose and need” for a proposed action for which environmental review is required. The articulation of a purpose and need statement is critical for a properly framed and robust alternatives analysis-- the “heart” of NEPA -- because only a sufficiently broad statement will allow full development of an adequate range of alternatives which enables the EIS to provide “a clear basis for choice among options by the decision-maker and the public.” The purpose and need statement should be drafted in such a manner to not curtail a full assessment of alternatives. Purpose and need statements are often accompanied by objectives. Importantly, an agency may not “define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency’s power would accomplish the goals of the action.”

The Action Agencies declined the opportunity to articulate a broad purpose and need statement that would facilitate a robust, comprehensive analysis of alternative actions that could offset the impacts of the FCRPS, enable timely recovery of Columbia Basin salmon and steelhead, and be responsive to the deficiencies of the 2016 biological opinion as articulated in Court decision. Instead, the Action Agencies’ purpose and need statement focuses on “reviewing and updating the management of the [FCRPS] System, including evaluating measures to avoid, offset, or minimize impacts to resources affected by the management of the System” while ensuring that “the prospective management of the System 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 critical habitat….” DEIS, Executive Summary, p. 16.

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11 See, e.g., Simmons v. U.S. Army Corps, 120 F.3d 664 (7th Cir. 1997); Davis v. Mineta, 302 F.3d 1104, 1118 (10th Cir. 2002); see also 40 CFR 1502.14.
12 *City of Carmel-by-the-sea v. United Dep’t of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997).
In effect, the Action Agencies have assumed the lowest possible bar for species protection by indicating that the purpose of the DEIS is to comply with ESA and then interpreting that obligation throughout the document in an unacceptably narrow manner. Accordingly, there is little acknowledgment that, as part of their obligation under ESA, the DEIS must analyze whether or not proposed actions impede listed species’ prospects for recovery. The Action Agencies could have provided needed direction and clarification as part of the purpose and need’s objectives but declined that opportunity as well as noted in more detail below.

Accordingly, the DEIS does not articulate a plan that will help ensure both the survival and recovery of listed salmon and steelhead. Nor does it attempt to reach bolder goals that will rebuild abundant, resilient and harvestable levels of salmon and steelhead which is the goal the region is seeking to attain, as confirmed by the Columbia Basin Partnership. With such a low bar for species protection guiding its analysis, the DEIS leaves itself little room for uncertainty or error before running afoul of both NEPA and ESA requirements and the Court decision. Unfortunately, as detailed infra, the DEIS conclusions and analysis are underpinned by significant uncertainty providing little assurance that the Preferred Alternative will achieve even the low bar it has set for listed salmonids.

a. The stated objective of “improving” fish populations is insufficient to meet applicable laws, including the Endangered Species Act.

TU appreciates that the DEIS includes objectives to identify how the Action Agencies aim to achieve their purpose and need. When clearly constructed, project objectives allow a measurable mechanism for decision-makers and the public to assess whether and to what degree the stated alternatives meet the purpose and need. In particular, objectives can help quantify how project alternatives will fulfill ESA obligations and further species recovery objectives.

Regrettably, the DEIS objectives, especially for fish species, are too vague to be meaningful. This, in combination with the fact that objectives for other non-fish purposes (i.e., power supply)

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contain more detail, enables an unbalanced DEIS analysis where more environmentally robust alternatives cannot meet the objectives for other purposes yet alternatives with more robust measures for non-fish purposes can still meet the fish objectives with minimal environmental safeguards. For instance, the DEIS contains objectives to “improve” adult and juvenile salmon and resident fish populations. DEIS, Executive Summary, p. 19. No definition, information or metrics are provided regarded what constitutes improvement. Without direction or metrics to provide meaning to this term, the DEIS analysis appears to be mostly guided by the objective to “comply with environmental laws.” DEIS, Executive Summary, p. 18. This objective, of course, requires compliance with ESA but does not include any metrics to inform how the Action Agencies will determine that proposed actions are meeting both the survival and recovery prongs of ESA.

Section 7 of the ESA requires 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 To "jeopardize the continued existence of" a species means "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."17 The survival and recovery aspects of this obligation are distinct.18 A species may be jeopardized even "if there is no appreciable reduction of survival odds" because "a species can often cling to survival even when recovery is far out of reach."19 In other words, proposed actions cannot appreciably impede species’ survival or recovery prospects.20 Accordingly, the Action Agencies must analyze project effects on recovery as well as survival.21

17 50 C.F.R. § 402.02 (emphasis added).
18 While “they are not necessarily mutually exclusive, recovery and jeopardy are two distinct concepts.” Cascadia Wildlands v. Thrailkill, 806 F.3d 1234, 1244 (9th Cir. 2015). In making a jeopardy determination, fish agencies are required to assess “both the survival and recovery of a listed species.” 50 C.F.R. § 402.02. The agency is not permitted to resolve the difficulty of distinguishing between survival and recovery “by ignoring recovery needs and focusing entirely on survival.” Nat’l Wildlife Fed’n, 524 F.3d at 932.
20 Id. at 932.
21 Id.
Unfortunately, the DEIS does not provide sufficient metrics to track whether and in what magnitude and timeframe the alternatives assist the species to hit survival or recovery targets. Such targets (both high end recovery goals and numeric goals required to remove ESA protections for Columbia stocks) have already been articulated by the Columbia Basin Partnership and should have informed this effort. Without targets and metrics, the sufficiency of the alternatives in meeting legal requirements under the ESA and other federal laws cannot be determined.


The Action Agencies were compelled into the NEPA process pursuant to the Federal District Court’s directives in National Wildlife Federation v. National Marine Fisheries Service, 184 F. Supp.3d 861 (D. Or. 2016). The Court ordered that they conduct a NEPA analysis before they adopt and implement a NMFS biological opinion for listed Columbia River salmon and steelhead. Supporting its order, the Court noted:

For more than 20 years, NOAA Fisheries, the Corps, and BOR have ignored the admonishments of Judge Marsh and Judge Redden to consider more aggressive changes to the FCRPS to save the imperiled listed species. The agencies instead continued to focus on essentially the same approach to saving the listed species—minimizing hydro mitigation efforts and maximizing habitat restoration. Despite billions of dollars spent on these efforts, the listed species continue to be in a perilous state. One of the benefits of a NEPA analysis, which requires that all reasonable alternatives be analyzed, is that it allows innovative solutions to be considered and may finally be able to break through any bureaucratic logjam that maintains the status quo. The agencies, public, and public official will be able to evaluate the costs and benefits of various alternatives. The FCRPS remains a system that “cries out” for a new approach. A NEPA process may elucidate an approach that will finally move the listed species out of peril.


The Action Agencies indicate that the DEIS is intended to be responsive to the Court’s direction.

The co-lead agencies’ assessment also addressed the need to respond to the Opinion and Order issued by the U.S. District Court for the District of Oregon to evaluate how the system can be operated in compliance with Section 7(a)(2) of the ESA.
DEIS, p. 7-3

However, the Action Agencies did not embrace the direction of the Court when structuring the DEIS analysis around a purpose and need statement and accompanying objectives that effectively ensured that the same unproductive path of the previous plans (which were all rejected in federal court) would persist without measures adequate to meet ESA and other legal obligations. Ensuring that the survival and recovery of ESA-listed anadromous fish species is not appreciably reduced by the FRCPS should have been the foundation for the DEIS purpose and need statement and its objectives.

The Court recognized the value of objectives, particularly to identify whether and how actions meet ESA obligations.22 Specifically, the Court noted that without metrics tied “to any estimated recovery abundance levels and the timeframe needed to achieve those levels, even roughly” it cannot be rationally concluded that an alternative “will be sufficient to avoid appreciably reducing a species’ chance of recovery.”23 The Court also emphasized the particular importance of metrics when encountering species with low abundance levels recommending the identification of “any metric or goal that considers whether the incremental improvements to the currently low abundance levels [of listed fish populations] are sufficient to avoid creating a "new risk of harm" by decreasing the chances of recovery of the listed species.”24 The Court further suggested that an analysis of Viable Salmonid Populations (VSP) parameters such actual abundance, spatial structure and diversity should inform a jeopardy analysis.25

As noted above, however, the purpose and need objectives do not identify any metrics that can enable the Action Agencies and members of the public to determine whether the proposed actions meet ESA standards or otherwise benefit fish populations. Instead, vague objectives unmoored to the ESA’s legal requirements and fish requirements in other federal laws, including

23 Id. at 894.
24 Id. at 892.
25 Id. at 887-890; See also McElhany, P., M.H. Ruckelshaus, M.J. Ford, T.C. Wainwright, and E.P. Bjorkstedt. 2000. Viable salmonid populations and the recovery of evolutionarily significant units. U.S. Dept. Commer., NOAA Tech. Memo. NMFSNWFS-42, 156 p (identifying four broad categories for VSP parameters: diversity, spatial structure, abundance, and productivity. These factors have been identified as a means to assess populations, establish delisting goals, and provide guidelines for relating viability at the population level and broader levels.)
treaties with Native American tribes, results in a preferred alternative that does little more than preserve the status quo; an outcome which is directly contrary to the Court’s direction.

ii. The DEIS Effects Analysis for Aquatic Resources is Incomplete and Unclear

Under NEPA, the analysis in an EIS must consider direct, indirect, and cumulative effects of the proposed alternatives. “Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.” 40 C.F.R. § 1508.8. Unfortunately, the DEIS effects analysis is insufficient because of its reliance on multiple, sometimes conflicting, modeling tools that fail to adequately capture the alternatives’ range of impacts, including the beneficial impacts of LSDR included in Multiple Objective (MO) Alternative 3. TU’s specific comments on the DEIS effects analysis are set forth below.

a. The DEIS fails to disclose model limitations and does not adequately explain how divergent model results are used to evaluate alternatives

The DEIS uses quantitative results from COMPASS, CSS and the Life Cycle Model (LCM) to predict juvenile and adult survival metrics for focus populations of salmon and steelhead. DEIS, p. 3-358. The DEIS notes that, in some scenarios, the models produce very divergent predictions and attributes these to a few critical assumptions. “While the models apply different assumptions and predict survival with different environmental variables on different temporal scales, the divergent predictions are the result of only a few critical assumptions.” DEIS, p. 3-360. The most significant assumption being attribution of cause for changes in latent mortality.

An EIS is required to clearly present information and analysis of the environmental consequences that form the scientific and analytic base for consideration of reasonable alternatives.26 In so doing, it must identify the methodologies used, and must explicitly refer to the scientific sources of information relied upon for the conclusions it sets forth.

The DEIS clearly acknowledges and describes the divergent results of the different models. However, the DEIS is less clear about which of the results it is relying upon to reach its effects

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26 40 C.F.R. sections 1502.14, 1502.16.
analysis conclusions. The DEIS notes that the model’s different assumptions produce different results related to the magnitude of benefit and significance of impact of all alternatives. Without additional analysis, inclusion of the results of both models mainly serves to highlight the inherent uncertainty that exists in terms of fish outcomes with implementation of any of the alternatives. The one exception is that all models unequivocally find the most improvement for salmon and steelhead with implementation of MO3, and, despite uncertainty as to the magnitude of benefit, MO3 is in fact the only alternative that ensures the continued existence of salmon and steelhead in the basin.

Beyond divergent results, the models each have inherent limitations not adequately identified in the DEIS. For instance, the fact that the models focused only on a subset of stocks for which sufficient data were available. For most stocks, assessment was qualitative; based on application of general findings from empirical models without direct analysis. This shortcoming is not explored or described sufficiently in the DEIS. Additionally, germane questions posed by independent subject matter experts about the models’ limitations are not addressed. For example, the Independent Science Advisory Board (ISAB) questioned the insensitivity of COMPASS model to differential spill. The DEIS is unclear if this insensitivity, relative to the findings of the CSS model, is due to truly mechanistic/empirically based differences in impact of spill or a lack of variability in the data used to evaluate spill.27

Given the limitations and the wide range of results presented by the different models regarding effects to salmon and steelhead populations, it is necessary for the Action Agencies to disclose what specific model results (and other scientific information) they are relying upon to inform their effects conclusions and selection of a preferred alternative. To the extent there is significant uncertainty in the modeling, the DEIS must account for that by considering the impact on listed fish populations in the event that the worse-case outcome materializes and concrete actions or processes that are recommended to mitigate against that uncertainty. This analysis should be guided by a recognition that the Action Agencies’ ESA obligation to “insure” against a likelihood of jeopardy requires that the benefit of the doubt be given to listed species.

and the burden of protecting against risk and uncertainty on the agency. See Ariz. Cattle Growers’ Ass’n v. Salazar, 606 F. 3d 1160, 1166 (9th Cir. 2010).

b. The benefits of LSDR are not adequately captured in the DEIS

NEPA requires the consideration of both beneficial and adverse effects of the proposed alternatives.28

It is absolutely essential to the NEPA process that the decisionmaker be provided with a detailed and careful analysis of the relative environmental merits and demerits of the proposed action and possible alternatives, a requirement that we have characterized as "the linchpin of the entire impact statement", Monroe County Conservation Society, Inc. v. Volpe, 472 F.2d at 697-98.

Natural Resources Defense Council v. Callaway, 524 F.2d 79, 92 (2d Cir. 1975)

Despite this requirement, the DEIS does not adequately capture the benefits of MO3. As noted above, the divergent model results highlight the risk of uncertainty present from implementation of the alternatives, but neither is sufficient to capture the benefits of LSDR in MO3.

For instance, the presented models do not address the following benefits of dam removal: (1) a much more productive food web (due to the shift to lotic habitat and influxes of marine-derived nutrients) providing increased food sources for salmon and steelhead; (2) habitat complexity and the water temperature, foraging and predator avoidance benefits it provides; (3) improved fitness of smolts due to the fact that they would not have to actively migrate and could ride the current through the lower Snake; (4) reductions in predator populations; 5) improvements in life history and genetic diversity that would be developed and maintained in a complex, free-flowing river;

28 40 C.F.R. § 1502.23 (“[T]he weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis.”); but see e.g., Sierra Club v. Sigler, 695 F.2d 957, 978-79 (5th Cir. 1983) (holding that NEPA “mandates at least a broad, informal cost-benefit analysis,” and so agencies must “fully and accurately” and “objectively” assess environmental, economic, and technical costs); Chelsea Neighborhood Ass’ns v. U.S. Postal Serv., 516 F.2d 378, 387 (2d Cir. 1975) (“NEPA, in effect, requires a broadly defined cost-benefit analysis of major federal activities.”); Calvert Cliffs’ Coordinating Comm. v. U.S. Atomic Energy Comm’n, 449 F.2d 1109, 1113 (D.C. Cir. 1971) (“NEPA mandates a rather finely tuned and ‘systematic’ balancing analysis” of “environmental costs” against “economic and technical benefits”); Nat’l Wildlife Fed. v. Marsh, 568 F. Supp. 985, 1000 (D.D.C. 1983) (“The cost-benefit analysis of NEPA is concerned primarily with environmental costs. . . . “).
and 6) positive and interactive feedback loops that would continue to increase the synergistic benefits of each of these effects.

Together, these benefits would be expected to provide a huge boost to Snake River stocks, but the benefits are not addressed in the modeling. This is a major omission. Even if, at this time, there is not sufficient empirical information to robustly capture these beneficial effects in the model, a comprehensive effort to capture them qualitatively should have been made.

Additionally, assumptions were made in the models that likely serve to under-estimate the benefit of dam removal. For instance, the LCM model used information about smolt survival taken from free-flowing sections of the Snake River upstream of Lower Granite Reservoir and applied those to downstream reaches to evaluate smolt survival through a free-flowing river below the lower Snake dams. However, upstream migrants are smaller and less mature than a downstream fish would be and therefore downstream fish survival estimates from the LCM are likely under-estimated.

c. The effects analysis fails to adequately analyze impacts to wild fish

The DEIS notes that, in most cases, “quantitative results from COMPASS, CSS, and the Life Cycle Model (LCM) are based on a combination of hatchery and natural origin fish.” DEIS, p. 3-358. This fact, along with the existence of large numbers of hatchery fish in certain systems, such as the Snake, confound attempts to estimate impacts to wild fish from implementation of the alternatives. This is problematic as it serves to mask the imperiled status of ESA-listed wild stocks of salmon and steelhead, many of which are experiencing sharp downward population trends, and over-emphasizes solutions that are more tailored for hatchery fish. The Action Agencies’ must evaluate and disclose how the high number of hatchery fish effect the modeling results and conclusions with respect to wild fish.

d. The models fail to adequately capture the full range of impacts from the alternatives and disclose relevant shortcomings

NEPA requires the “up-front disclosures of relevant shortcomings in the data or models” relied upon in environmental documents. Lands Council v. Powell, 395 F. 3d 1019, 1032 (9th Cir.
2005). In some cases, the assumptions used in the models fail to capture the effects to fish populations from certain actions, yet these limitations are not disclosed. As one example, the LCM shows a benefit to MO4’s proposal to barge late migrating smolts because such an action allows the smolts to avoid lethal high-water temperatures, particularly in the lower Columbia. However, the model does not account for the fact that adult salmon and steelhead (particularly steelhead) that were transported as juveniles often have a higher tendency to stray into rivers other than their river of origin.

Additionally, the model does not contextualize its findings to note that smolt transportation programs that have occurred to date have not met regional SAR goals identified by the Northwest Power and Conservation Council (2% to 6% SAR range, average 4% for ESA-listed Snake and Columbia salmon and steelhead populations). For instance, Comparative Survival Study (CSS) data shows the 24 year average SAR of transported wild Snake River Spring Chinook was 0.98%, indicating not only are these fish not approaching the 2% SAR needed to ensure population maintenance, but are declining despite transport. Additionally, hatchery Spring Chinook originating from Dworshak, Sawtooth, Catherine Creek and Clearwater hatcheries, that were transported as juveniles all have SARs far less than 1% indicating population decline. As stated in the CSS 2019 Annual Report, “[f]or Snake River populations, none of the passage routes (in-river or juvenile transportation) have provided SARs within the range of the NPCC objectives.” Further, “[u]nless a minimum level of survival is maintained for listed species sufficient for them to at least persist, the issue of the effect of transportation is moot.” Accordingly, the benefits from this action (transport) are likely over-stated especially given the precarious state of many of the stocks.

31 Id.
32 Id.
33 Id. quoting Mundy et al. 1994 (an independent peer review of the transportation program in the early 1990s).
iii. The DEIS Fails to Analyze Lower Snake River Compensation Plan Hatchery Impacts as a Direct Effect of the Project as Required by NEPA

NEPA defines “direct effects” of a proposed action as those “that are caused by the action and occur at the same time and place.” 40 C.F.R. section 1508.8(a). The DEIS notes that the Lower Snake River Compensation Plan (LSRCP) was created to mitigate the loss of salmon and other fish and wildlife affected by the construction of the four Lower Snake River dams. The LSRCP required construction of eight fish hatcheries. Currently, “Bonneville directly funds USFWS for the annual operation and maintenance of these LSRCP facilities.” DEIS, p. 2-32. LSRCP “hatcheries and satellite facilities produce and release more than 19 million salmon and steelhead as part of the program’s mitigation responsibility.” Id.

The LSRCP is included as part of the No Project Alternative and the DEIS notes it would be continued under all of the alternatives except MO3. DEIS, p. 2-37. Despite the direct relationship between operation of the CRSO and LSRCP hatchery operations, the DEIS does not treat LSRCP hatchery effects as direct effects. Instead, its effects analysis notes that anadromous fish are influenced “by many factors unrelated to the operations and configuration of the CRS” and include “competition and interbreeding with hatchery stocks.” DEIS, pp. 3-446, 447. In fact, the LSRCP hatcheries are directly related to the operations and configuration of the FCRPS and must be analyzed as such.

iv. The DEIS Fails to Adequately Analyze the Impacts of Hatchery Fish on Wild Salmon and Steelhead Using the Best Available Science

The best available scientific information is clear that hatchery fish do not address the factors limiting wild fish and have, in many cases, contributed to the decline of wild populations. In its 2015 report to Congress, the congressionally-appointed Hatchery Scientific Review Group (HSRG) stated:

Hatcheries cannot replace lost habitat and the natural populations that rely on it. It is now clear that the widespread use of traditional hatchery programs has actually contributed to the overall decline of wild populations.

This fact is corroborated by the 2015 finding of the Independent Scientific Advisory Board (ISAB) that density dependence (i.e., overcrowding of available habitat) reductions in wild population productivity in the interior Columbia basin is becoming evident and that too many hatchery fish spawning in the wild is a major and pervasive problem.\(^{34}\) In addition to these demographic effects, hatchery fish also jeopardize the genetic integrity and life history diversity of wild fish when they interbreed, threatening their ability to adapt to a changing environment. Unfortunately, these effects are not meaningfully captured in the DEIS’s effects analysis or in the cumulative effects analysis.

Accordingly, the DEIS fails to give more than a cursory analysis to this topic despite the existence of ample research that clearly demonstrates that the productivity of wild populations decreases when hatchery fish spawn in the wild. ISAB at 141. A 2016 study by the Independent Science Advisory Board found that “[s]trong density dependence is now evident in at least 25 of 27 spring/summer chinook populations, the Snake River fall chinook population, and all 20 steelhead populations examined upstream of Bonneville Dam.” ISAB at 139. As the ISAB points out, this is likely due in part to supplementation programs that result in large numbers of adult hatchery fish on the spawning grounds: 35-80% of chinook spawners and 15-80% of steelhead spawners per ESU and DPS, respectively. ISAB at 141.

The Action Agencies’ analysis of hatchery impacts on wild salmon and steelhead is badly out of step with the best available science. It utterly fails to account for the ISAB’s reports and the large and growing body of peer-reviewed literature establishing the harmful genetic and ecological impacts of hatcheries on wild populations. Instead, the Action Agencies suggest that hatcheries are beneficial to wild populations without providing a scientific basis for such conclusions. For example, the DEIS says that the preferred alternative includes measures to benefit ESA-listed fish including “fish hatchery production” (DEIS, p. 7-22), yet offers no scientific support for that conclusion. In other places, the analysis of hatchery impacts is woefully incomplete. For example, in its analysis of MO3, there is a brief qualitative analysis suggesting that the reduction of hatchery fish by “as much as 85 percent” would result in “lower survival rates of wild Chinook as they navigate through the predators inhabiting the migratory

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\(^{34}\) *Density Dependence and Its Implications for Fish Management in the Columbia Basin*, Independent Scientific Advisory Board (ISAB) (February 25, 2015).
corridor DEIS, pp. 3-548, 549, 558. This conclusion is not supported by any quantitative analysis. The DEIS fails to round out this analysis by adequately analyzing the expected predation benefits from dam removal, such as the concomitant reduction in lentic predators that would occur with removal of the reservoirs or the increased ability of salmon and steelhead to avoid predation in a free-flowing river.

TU acknowledges that there are benefits to hatchery production, such as maintaining populations on the brink of extinction and reintroducing extirpated populations. But the scientific evidence about the harmful genetic and ecological effects of hatcheries on wild populations is clear. A much more robust analysis, based on the best available science, on the effects of hatcheries on wild salmon and steelhead is required.

v. The DEIS Fails to Explain How Maintaining Suboptimal Temperature Conditions Meets the Purpose and Need and Requirements of Federal Law

The DEIS fails to adequately analyze how maintaining severely degraded temperature conditions, especially considering climate change projections, supports the conclusion that the preferred alternative meets the purpose and need and legal obligations, such as ESA and the Clean Water Act. The DEIS acknowledges the degraded “status quo” temperature condition and the role that the proposed action has in maintaining that condition.

Water temperatures in many reaches do not meet the regulatory standards in the summer and early fall. System operations can impact both water temperature and TDG in the Columbia River Basin…

DEIS, p. 3-236

Under the No Action, the State water quality standard for temperature is violated on average (for the five years simulated) 57, 71, 71 and 58 days downstream of McNary, John Day, The Dalles and 2207 Bonneville dams, respectively. As comparison, under the Preferred Alternative, the State water quality standard is violated (on average for the five years simulated) 63, 71, 72, and 59 days downstream of McNary, John Day, The Dalles and Bonneville dams, respectively. The differences in tailwater temperatures under the No Action Alternative and the Preferred Alternative are considered negligible.

DEIS, p. 7-86.
As noted above, the water quality standard for temperature will be violated at a slightly higher rate under the preferred alternative as compared to the no-action alternative. The DEIS does not explain how essentially maintaining status quo temperature conditions (or worsening them) meets its obligations under federal law. ESA requires that the preferred action not be “likely to” result in “destruction or adverse modification” of designated “critical” habitat of listed species. Critical habitat includes areas with the physical or biological features “essential to the conservation” of listed species and includes elements such as adequate water temperature. Critical habitat includes the juvenile and adult migration corridors of the Snake and Columbia Rivers. The Court gave direction on this point noting that “[s]imply maintaining the status quo when there is severely degraded habitat that does not serve its conservation role and will be adversely modified unless changes are made to the operations of the FCRPS does not suffice [to meet ESA obligations].” Accordingly, the preferred alternative, which would maintain harmful water temperatures in contravention of federal law, is legally deficient.

vi. The Affected Environment Omits Necessary Information Central to Understanding Status and Trends of Key Fish Species

The Affected Environment section omits information that is central to understanding the status and trends for the relevant salmon and steelhead stocks. The description of each species does not include information expressed in the metrics that the Court found lacking in or missing from the biological opinion. For instance, the DEIS should have displayed relevant information for each stock at the (Evolutionarily Significant Unit or Distinct Population Segment) level regarding both the “survival prong” and the “potential for recovery” elements of the jeopardy standard including analysis of the levels of abundance, distribution and life history diversity that are necessary to ensure the likelihood of recovery is not appreciably diminished. This is essential for being able to understand the current status of each species because the minimum population levels needed to ensure survival are found at the ESU/DPS level and not the aggregate species level.

At a minimum, the final EIS (or revised DEIS) should contain information in tabular or graphic form regarding the three quantitative measures that are part of the “trend towards recovery” analysis: abundance trend, the median annual change in population in four year running sums, and the recruit per spawner ratios. While necessary, these three measures are not sufficient. There should also be information on the abundance of each of the 27 populations. This information will better inform decision-makers and the public about which populations are at alarmingly low numbers where survival may be in question, or where the low abundance numbers are trending at a level that diminishes the likelihood of recovery.

vii. The Action Agencies Preferred Alternative Does Not Include Necessary Actions to Meet ESA and Northwest Power Act

NEPA requires agencies 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.” This requirement … seeks to ensure that each agency decision maker has before him and takes into proper account all possible approaches to a particular project … which would alter the environmental impact and the cost-benefit balance.

42 U.S.C. § 4332(2)(D).38 “A ‘viable but unexamined alternative renders [the] environmental impact statement inadequate.’”39 As part of the alternatives analysis, the DEIS must examine whether and how the alternatives meet legal obligations including ESA, the Northwest Power Act and treaty obligations. Relevant ESA obligations are discussed more fully in section (II)(a)(i)(a) supra. The Northwest Power Act requires Action Agencies to take the Fish and Wildlife Program adopted by the Northwest Power

38 Calvert Cliffs' Coordinating Committee, Inc. v. U. S. Atomic Energy Commission, 449 F.2d 1109, 1114 (D.C. Cir. 1971). Further, NEPA section 102(2)(E) requires that the federal lead agency “study, develop, and describe appropriate alternatives to recommended course of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources....” 42 U.S.C. § 4332(2)(E). The duty to consider alternatives under NEPA 102(2)(E) is “at least as broad” as the duty under NEPA section 102(2)(C)(iii). The purpose is “to insist that no major federal project should be undertaken without intense consideration of other more ecologically sound courses of action, including shelving the entire project or of accomplishing the same result by entirely different means.” Environmental Defense Fund v. U.S. Army Corps of Engineers, 492 F.2d 1123 (5th Cir. 1974); see Mandelker, supra § 9:22, p. 9-53.

39 Muckleshoot Indian Tribe, supra, 177 F.3d at 814 (quoting Citizens for a Better Henderson v. Hodel, 768 F.2d 1051, 1057 (9th Cir. 1985)).
and Conservation Council (NPCC) “into account at each relevant stage of decision-making processes to the fullest extent practicable.”  

The program currently seeks to achieve smolt-to-adult return rates in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead. Additionally, it seeks an increase in total adult salmon and steelhead runs to an average of 5 million annually by 2025 to, among other things, support tribal and nontribal harvest.

Despite the limitations of the models, the DEIS is clear that removing the lower Snake River dams is the best option for Snake River salmon and steelhead. Both the LCM and CSS model find that MO3 offers Snake River salmon and steelhead the best chance for recovery by improving smolt-to-adult returns (SARs) by the highest percentages of all the studied alternatives. But, as noted above, the benefits to fish populations from this alternative are likely vastly underestimated given modeling limitations.

Yet, the Action Agencies selected a different set of actions without LSRD as the preferred alternative. The preferred alternative is expected to yield improvements to SARs that are far less than MO3. In fact, depending on how the assumptions play out, it is possible that the preferred alternative will not even meet the ESA’s survival requirement for Snake River salmon and steelhead let alone not appreciably reduce the likelihood of recovery.

Depending on the model and Evolutionarily Significant Unit (ESU)/Distinct Population Segment (DPS), the effects to anadromous fish in Regions C and D have the potential to range from a moderate adverse impact to a major beneficial effect. The ranges in potential effects are due to uncertainty and spread between modeled estimates for the Juvenile Fish Passage Spill measure because of the unknown magnitude of latent mortality and an unknown level of reduction in transportation for some species.

DEIS, p. 7-88.

40 The Northwest Power Act requires the Northwest Power and Conservation Council (NPCC) to adopt and renew at least once every five years a Fish and Wildlife Program “to protect, mitigate, and enhance fish and wildlife, including related spawning grounds and habitat, on the Columbia River and its tributaries.” 16 U.S.C. 839b (h)(1).
42 Id.
If a “moderate adverse impact” situation materializes, the LCM model predicts SARs for Snake River spring/summer Chinook could decrease 7.5 percent under the preferred alternative, with a lower end of the predicted SAR range of less than 1%. This means the preferred alternative is predicted to provide SARs below even the threshold necessary to avoid continued population declines, well below the 2% minimum required for population maintenance, and significantly below the region’s 4% average SAR goal (range of 2%-6%) for rebuilding Snake River stocks of salmon and steelhead. The DEIS does not explain how its ESA and Northwest Power Act obligations can be met when this scenario is a real possibility.

Moreover, the preferred alternative does not appear to do anything to ameliorate important limiting factors for listed salmon and steelhead, including many factors that will worsen with climate change. For instance, as noted in section II(a)(iv) supra, the preferred alternative does not improve temperature conditions as compared to the no-action alternative.

Accordingly, the preferred alternative does not meet the requirements of the ESA or the Northwest Power Act.

viii. MO3 is the Only Alternative with Potential to Rebuild Snake River Stocks to an Abundance Needed to Meet ESA Obligations, Northwest Power Act Goals and Treaty Obligations

At a minimum, the preferred alternative must provide reasonable assurance that ESA obligations will be met. However, to achieve cultural and economic stability provided by healthy salmon and steelhead stocks, and to honor federal treaties with Native American tribes, restoring abundant, healthy, and harvestable/fishable populations of naturally produced salmon and steelhead is needed. That is the goal clearly articulated by the Columbia Basin Partnership.

MO3, which includes LSRD is the only alternative that has the potential to achieve abundant, healthy, and harvestable/fishable populations of naturally produced Snake River stocks. Accordingly, MO3 is the only legally defensible option for a preferred alternative because it alone has potential to rebuild Snake River stocks to the level of abundance required to comply with the Northwest Power Act, the Endangered Species Act and honor treaty obligations with Columbia Basin tribes. It also is the only alternative that could meet the recovery goals established by the Columbia Basin Partnership.
Actions contained in MO3 are best considered with other complementary actions, such as increased spill, predator management and habitat improvements, that will benefit both Snake River stocks and other ESUs and DPSs in the Columbia Basin. For instance, an analysis by the Fish Passage Center found that combining lower Snake River dam removal with spill to the 125% tailrace TDG levels (MO34) resulted in the “greatest expected improvements across all biological response metrics” for Snake River stocks as compared to the DEIS alternatives including on average exceeding the 4% average SAR regional goal. Increased spill operations would also benefit other Columbia stocks. For example, the DEIS notes that under MO3 (spill to the 120% tailrace TDG levels) there is a predicted increase in Columbia spring Chinook salmon in-river survival due to increased spill levels in the lower Columbia River. DEIS, p. 7-9.

All included actions should be accompanied by a robust adaptive management program to monitor the effectiveness of the actions toward meeting clearly articulated habitat and biological goals and objectives and to adjust implementation as warranted. These actions can be undertaken in a manner that meets the needs of all stakeholders in the region, including water users, power producers and local communities.

a. **Lower Snake dam removal is necessary to meet ESA requirements and recovery goals**

MO3 is the alternative that gives Snake River fish the best chance for persistence and recovery by improving smolt- to- adult returns to the Snake River, with anticipated improvements of 14 percent to 170 percent considering estimates from both models. Snake River salmon and steelhead population numbers have been declining for decades and now stand far from their historic levels. In 2020, Idaho (the final spawning destination for most) saw some of the worst returns on record for both salmon and steelhead. In the 1800s, an estimated 4 million salmon and steelhead made it to the Snake River Basin, gaining 6,000 feet in elevation over 800 miles as they swam from the ocean to spawn. In the 1920s, large-scale dam building began on the Columbia River, the gateway to the Snake River, and populations began to drop.

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By the mid-60s as the Snake River dams were nearing completion only 100,000 adults returned. In 2018, barely 18,000 wild Chinook salmon and steelhead returned to Idaho.\(^{44}\)

While there are multiple causes for the decline of Snake River salmon and steelhead, the best available science is clear on two points. First, if the current conditions experienced by Snake River salmon and steelhead populations do not reverse, these iconic populations will face extinction. Second, removal of the four lower Snake River dams would vastly improve the chances for survival of the Snake River stocks and presents the best chance at recovering those stocks to abundant, healthy, and harvestable/fishable and levels.

The reason this action is expected to be so effective is multi-fold. While ocean conditions do have a big impact on salmon and steelhead populations and always have, salmon and steelhead have, over their evolutionary history, developed resiliency in the face of changing ocean conditions through diverse life histories that are spread spatially and temporally across their freshwater and ocean habitats. This diversity ensures overall stability for the different major stocks and allows them to readily take advantage of good years with suitable ocean conditions. Salmon and steelhead fare on average far better over time in watersheds with fewer dams to cross than they do in the Lower Snake River, where they must pass eight dams to get to their spawning grounds – this is in spite of being impacted by the same ocean conditions.

Additionally, physical contact with each dam kills a certain number of fish, and yet this is only one of many causes of dam-related mortality. Other dam-related mortality factors include: 1) large reservoirs behind the dams provide prime habitat for predators that prey on salmon and steelhead; 2) slow moving water which requires more energy to pass through to get to the ocean and increases the average time for smolts to reach the sea by 10 times; 3) high water temperatures that do not cool at night as they have historically and increase stress on migrating salmon and steelhead; 4) loss of important complex lotic habitat, including spawning reaches for Fall Chinook, due to 140 miles of impounded water; and 5) cumulative stress from the experience of navigating the hydro-system, which subsequently kills a substantial number of “successful” migrants after they reach the estuary or ocean so that these fish do not return to

\(^{44}\) TU analysis of Fish Passage Center data.
spawn. Dam removal would alleviate these dam-related mortality factors and open the untapped potential of the Snake River to salmon and steelhead.

And the benefits of reopening the Snake River would persist, and become ever more critical, with climate change. Representing twenty percent of the total accessible stream habitat within the native distribution of salmon and steelhead on the West Coast and sixty-five percent of the future available cold water, a re-accessible Snake River would be a major climate change refuge for salmon and steelhead populations. Consequently, it has the greatest potential for recovery of any basin on the Columbia River.

The DEIS acknowledges that MO3 presents the best opportunity for improving fish SARs and water quality.

As described in Chapter 3, model estimates for MO3 showed the highest predicted potential smolt-to-adult returns (SARs) for Snake River salmon and steelhead amongst the alternatives. The two models used to evaluate effects to certain salmon and steelhead (see section 3.5 for 340 specific species) predict a wide range of improved SARs for this alternative, indicating higher uncertainty pertaining to the level of benefits compared to the other alternatives. For example, MO3 is predicted to result in improvements to SARs for Snake River Spring/Summer Chinook that range from 14 percent (LCM) to 140 percent (CSS) relative to the No Action Alternative. Additionally, under MO3 there is a slight increase predicted in upper Columbia spring Chinook salmon in-river survival due to increased spill levels in the lower Columbia River. The quantitative model results vary in the magnitude of their predictions due to how they factor in latent mortality and density dependence.

DEIS, p. 7-9

Overall, long-term water quality would improve in the lower Snake River under MO3, with improved water temperatures during the fall and increased nighttime cooling in the summer. In addition, riverine processes would be restored, eliminating some of the pH, and harmful algal bloom problems that currently exist. Elevated TDG would also be eliminated. Additionally, there would be major increases in Snake River fall Chinook spawning habitat and associated potential beneficial effects for recreational, tribal, and commercial fishing.

DEIS, p. 7-12.

Yet, despite ESA obligations and the overwhelming scientific evidence supporting dam removal, the Action Agencies declined to select MO3 as the preferred alternative because of the
impacts to the power system and the fact that additional authorities/legislation would be required to implement certain components. As described below, neither justification should have precluded consideration of MO3 as the preferred alternative.

b. The DEIS should include a comprehensive and objective analysis regarding costs and benefits of Lower Snake River dam removal.

Under NEPA, social and economic effects must be considered if they are related to the proposed project’s natural or physical effects. 40 CFR 1508.8. Inaccurate or incomplete economic information may defeat the purpose of an EIS by “impairing the agency’s consideration of the adverse environmental effects” and by “skewing the public’s evaluation” of the proposed agency action.45 The DEIS notes that MO3 does not meet the purpose and need because removal of the lower four Snake River dams would eliminate hydropower generation and river barge navigation on the lower Snake.

This alternative would eliminate hydropower generation and navigation on the lower Snake River which affects the ability of this alternative to meet the Purpose and Need. DEIS, p. 7-9.

In recommending that the Action Agencies more thoroughly consider removal of the four lower Snake dams as part of their preferred alternative, TU is mindful of the large economic benefits provided by some, but not all, of the federal dams that constitute the FCRPS. Several produce a large amount of hydroelectric power, the loss of which would have serious negative impacts on the Pacific Northwest. Such impacts are appropriately considered in determining the reasonableness of this action. However, the DEIS discounts information demonstrating that the public benefits currently provided by the Lower Snake River dams can be adequately provided in alternative ways. Additionally, as noted in Section II(a)(ii)(b) supra and Section II(a)(vi)(d) infra, the DEIS fails to adequately capture the immense biological, ecological and economic benefits expected from removing the Lower Snake River dams. These omissions heighten the risk that the Action Agencies consideration of the adverse environmental effects will be “impaired” and that the public’s evaluation of the DEIS will be “skewed.”

45 Hughes River Watershed Conservancy v. Glickman 81 F. 3d 437, 446 (4th Cir. 1996).
For instance, a report by ECONorthwest, found that public benefits of removing the dams actually outweigh the costs. The economic feasibility study demonstrated that transportation of agriculture products could be accomplished just as efficiently and cost-effectively on existing rail lines, and that effects on irrigation would be minimal because most farming in the region is not irrigated. The giant economic value of the region’s salmon and steelhead fisheries exceed the value of removal, the report claims. Its authors estimate only a $1 to $2 per month power bill increase for consumers across the region and a slight increase in greenhouse gas emissions.

Additionally, in response to DEIS claims that significant cost increases would be needed to replace the energy and capacity of the Lower Snake River dams if they are removed, Rocky Mountain Econometrics produced a follow-up analysis to test “the need for the LSRD [Lower Snake River Dams] and what it would cost to cover that need in a pragmatic, economic fashion.” The report found that:

[a]veraged over the past 11 years the cost of replacing enough power to keep BPA’s interchange power levels above 2,000 aMW, to the full capability of the LSRD, by purchasing the equivalent amount of LSRD energy at NP15 prices, is only about $11 million per year, $38 million per year cheaper than the current LSRD M&O cost.[.]


It is clear that differing estimates exist pertaining to what it will “cost” to replace the benefits provided by the lower Snake River dams because these estimates are entirely dependent on underlying assumptions. Additionally, there are differing estimates regarding the economic benefits that will materialize from dam removal although the DEIS does not consider this point with any robustness. When a NEPA document includes a cost-benefit analysis, “it cannot be misleading.”47 Factors that should have been explored in more depth in the DEIS include but are not limited to: the costs of maintaining the aging infrastructure of the dams if they are not removed, changes to reservoir recreation and its associated industry, economic benefits associated with a restored commercial and recreational fishery and the tourism that accompanies

it, the economic benefits associated with increased recreation on a free-flowing Snake River such as increased boating, camping, hiking and hunting opportunities, potential for waterfront redevelopment in Lewiston/Clarkston, and projected costs of flood risk mitigation projects that will be needed if the dams remain (such as raising levees in Lewiston). Without this information, it is impossible for decision-makers and the public to meaningfully weigh the costs and benefits of the alternatives.

Importantly, even without dam removal, the Bonneville Power Administration faces the addition of wind, solar, storage, customer-side resources, and grid modernization technologies that are fundamentally changing the Northwest power system and impacting BPA’s business model. BPA is experiencing increasing costs and it cannot command the price for wholesale energy that it once could.\textsuperscript{48} Its aging infrastructure requires significant new investment. Meanwhile, BPA’s required fish and wildlife restoration costs - $17 billion over 20 years – now account for about 25 percent of BPA’s direct power costs yet have failed to restore abundant salmon populations to the Snake River and its tributaries.\textsuperscript{49}

Status quo is not an option for BPA, a fact that is not adequately acknowledged in the DEIS. It is, however, acknowledged in BPA’s Strategic Plan. The “continuation of some financial policies and practices — particularly those around cost management, debt management and reserves — would put BPA’s long-term financial health at risk.”\textsuperscript{50} BPA must strategically modernize its operations in ways that will benefit consumers, the regional economy and salmon and steelhead. Discounting all information that suggests a change in the status quo is warranted is not productive and will not alter the current unsustainable path. The status quo is not an option for salmon and steelhead either. Actions to protect and recover salmon can be undertaken in a manner that meets the needs of all stakeholders in the region, including BPA, power purveyors, water users and local communities. However, it will take leadership from the Action Agencies to reflect on all available information and enable a fair dialogue with the region’s

\textsuperscript{48} See BPA’s 2018-2023 Strategic Plan, page 37 noting that BPA is now selling more surplus power at wholesale prices that are lower than its Priority Firm power rates. This has reduced total revenues and put continued upward pressure on power rates.
\textsuperscript{49} Bonneville Power Administration, 2018-2023 Strategic Plan, page 41.
\textsuperscript{50} Bonneville Power Administration, 2018-2023 Strategic Plan, page 12.
stakeholders regarding what is necessary restore salmon and secure a climate friendly energy future that benefits people and the economy.

c. The Action Agencies must adequately evaluate alternatives that are beyond the agencies’ current authority to implement.

The DEIS contends that MO3 cannot be selected as the preferred alternative because it would not meet current congressionally authorized purposes for the four lower Snake River dams.

Alternative MO3 would not meet the congressionally authorized purposes of operating and maintaining the four lower Snake River dams for navigation, hydropower, envisioned recreational benefits, and providing irrigation. New congressional authority through the passage of new laws and associated funding would be required to implement the dam breaching measures in MO3. However, the dam breaching measures in MO3 were carried forward in the analysis to align with the District Court's Opinion and Order, and in response to comments received during public scoping that requested this alternative be evaluated.

DEIS, p.7-4

NEPA requires that all relevant, reasonable mitigation measures that could diminish the adverse impacts of the project be identified in the document, even if they are outside the jurisdiction of the lead agency or the cooperating agencies. See 40 C.F.R. §§ 1502.16(h) and 1505.2(c); 46 Fed. Reg. 18026. The inclusion of mitigation measures in this chapter is not intended to indicate that the co-lead agencies, or the Federal government as a whole, has the authority to perform all of the measures listed. If the measures are outside the jurisdiction of the co-lead agencies, those measures will not be included in the Preferred Alternative or Records of Decision (ROD). Their inclusion in this chapter serves to alert other agencies, officials, and the public who can implement the measures to the potential benefits of the measure.

DEIS, p. 5-2

However, the Action Agencies are not precluded from thoroughly considering MO3 as the preferred alternative even if new Congressional authorities or funding are needed to implement certain actions. NEPA requires the full consideration of all reasonable alternatives even if outside the lead agency’s jurisdiction. This requires the Action Agencies to “[r]igorously explore and objectively evaluate all reasonable alternatives . . . [and] [i]nclude reasonable alternatives not within the jurisdiction of the lead agency.” 40 C.F.R. § 1502.14. This includes
reasonable alternatives that are outside the scope of what Congress has approved or funded.\textsuperscript{51} NEPA guidance also makes clear that an EIS “may serve as the basis for modifying the Congressional approval or funding in light of NEPA’s goals and policies.”\textsuperscript{52} Therefore, even if the Action Agencies need congressional authorization or funding for some aspect of MO3, they can thoroughly consider it and then use the DEIS to recommended to Congress new authorities and investments necessary to implement it.

Additionally, the Action Agencies can commit in the DEIS to take concrete steps to comprehensively consider elements of MO3, such as seeking a reconnaissance study. The authority to review completed Corps projects was granted in the Flood Control Act of 1970, P.L. 91-611, Section 216, which reads:

The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corp of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due (to) the significantly changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest.

Clearly the physical and economic environment has shifted significantly since the Lower Snake River Dams went into operation. Accordingly, this provision is applicable and is a step that the Corps could commit to taking now.

d. The DEIS understates biological, ecological and economic benefits of wild fish recovery that MO3 would deliver

As described more fully in Section II(a)(ii)(b) \textit{supra}, the DEIS does not fully capture the range of biological and ecological benefits likely to materialize from breaching the lower Snake River dams. The DEIS also fails to fully capture the economic benefits from breaching. One of

\textsuperscript{51} See Envtl. Def. Fund, Inc. v. Army Corps of Engineers, 492 F.2d 1123, 1135 (5th Cir. 1974) ([u]nder NEPA, an agency “must consider [reasonable] alternatives which may be outside its jurisdiction or control, and not limit its attention to just those it can provide.” Central to NEPA’s goal of ensuring that agencies do not undertake a project “without intense consideration of other more ecologically sound courses of action” is a “thorough consideration of all appropriate methods of accomplishing the aim of the action, including those without the area of the agency’s expertise and regulatory control.”)

the glaring weaknesses is the failure to assign an economic value to wild fish recovery and increased angling activity that dam breaching and wild fish recovery would bring. Instead, the DEIS uses a qualitative analysis to suggest that new opportunities for angling and recreation “may offset” other changes.

Fishing Activities, as well as other recreation types, would be considerably reduced in the short term during and immediately following breach, but could rebound in the long-term as anadromous fish populations improve. The largest increases in the number of Snake River salmon and steelhead are projected under MO3. Therefore, fishing for these anadromous species could increase in the long term… relative to the No Action Alternative. The value of trips could also increase due to the increased abundance and diversity of wild fish.

DEIS, p. 3-1214

[N]ew opportunities for land and water-based river recreation and possibly anadromous recreational fishing may offset visitation losses…and recreational opportunities may even increase in the long-term relative to the No-Action Alternative.

DEIS, pp. 3-1222, 1223

Despite acknowledging that breaching presents increased long-term fishing opportunity, the DEIS entirely excludes the monetary value of post-breach salmon and steelhead fishing. The DEIS claims that fishing value is limited by uncertainties related to ESA restrictions and similar estimates were excluded from 2002 Corps analysis that was used as the primary basis of this economic impact estimate for the breach option. DEIS, p. 3-1219. In effect, this leaves MO3 without an assigned economic benefit in the DEIS. This improperly skews the “finely tuned” balancing analysis between environmental and economic considerations that the DEIS must undertake. 53 NEPA does not permit analytical gaps. The Action Agencies must find ways to quantify values or properly weigh “unquantified environmental amenities and values.” 54 To remedy this deficiency, the Action Agencies should utilize available, relevant information

54 NEPA section 102(2)(b); 42 U.S.C. section 4331(a).
including values from the EcoNorthwest Economics Tradeoff Study and provide better assurance that these values are being fully captured in the alternatives selection process.55

ix. **The Cumulative Effects Analysis Lacks Sufficient Detail to Permit a Meaningful Understanding of How Interconnected Actions Will Affect Aquatic Resources**

NEPA regulations specify that an EIS should consider cumulative impacts of agency action in an EIS. 40 C.F.R. § 1508.25(c). “Cumulative impact” is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency... undertakes such other actions.” *Id.* § 1508.7. NEPA regulations also require analysis of “indirect effects” of an agency action. The indirect effects of an action are those “caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable.” 40 C.F.R. § 1508.8(b).

More than a cataloguing of related past, present, and future actions is needed; the DEIS must provide detailed analysis.56 “[V]ery broad and general statements devoid of specific, reasoned conclusions,” will not suffice.57

Regrettably, especially as it relates to impacts to anadromous and resident fish populations, the DEIS mostly catalogues applicable cumulative actions, emphasizes uncertainty and engages in no real analysis of how the actions interplay. For example, the DEIS highlights 17 actions, in addition to the preferred alternative, that will cumulatively affect anadromous fish but contains little specific analysis about these actions relying instead on general conclusions and deferral to “uncertainty.”

Depending on which model is used (LCM or CSS), the effects to anadromous fish in Regions C and D would likely have the potential to range from a major adverse effect to

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[The EIS] must analyze the combined effects of the actions in sufficient detail to be “useful to the decision maker in deciding whether, or how, to alter the program to lessen cumulative impacts’ *quoting City of Carmel-By-The Sea v. U.S. Dept. of Transp.*, 123 F.3d 1142, 1160 (9th Cir. 1997).* Detail is therefore required in describing the cumulative effects of a proposed action with other proposed actions. *Neighbors of Cuddy Mountain*, 137 F.3d at 1379; *see also Blue Mountains Biodiversity Action v. Blackwood*, 161 F.3d 1208, 1214-15 (9th Cir. 1998).
57 *Id.* at 811.
a major beneficial effect. These results also vary by ESU and DPS. Consistent with
Chapter 6, the co-lead agencies determined RFFAs 1, 2, 3, 5, 6, 7, 8, 12, 13, 14, 15, 17,
19, 20, 22, 23 and 26 would likely impact anadromous fish. RFFAs that have the
potential to increase TDG, water temperatures, variability of flow, and reduce water
levels in the future, such as population growth and development, changes in land use,
water withdrawals, new storage projects in the mid-Columbia basin, habitat degradation,
and climate change, which could adversely impact anadromous fish, but it is uncertain to
what degree.

DEIS, p. 7-209.

The consideration of cumulative impacts must contain “some quantified or detailed
information” and “general statements about possible effects and some risk do not constitute a
hard look absent a justification regarding why more definitive information could not be
provided.”58 This omission lessens the value of the DEIS as the level of improvements that fish
populations will see over the life of the project is, in part, dependent on how these other
categories of activities are implemented. The fact that the DEIS is constructed to minimize the
scope of the Action Agencies obligations to fish species makes it even more critical that these
interdependent actions be fully analyzed and considered together in the cumulative effects
section.

For example, the DEIS fails to give more than a cursory analysis to certain past, present and
reasonably foreseeable future impacts to fish populations, such as hatchery and harvest impacts.
In the case of hatchery impacts, as noted in Section II(a)(ii)(d) supra, those that are supported by
the LSRCP should have been analyzed in the DEIS as direct effects. However, in addition to the
LSRCP hatcheries, the DEIS notes that there are “more than 100 other hatchery programs” in the
Columbia River basin. DEIS, p. 6-10. The past, present and reasonably foreseeable future
effects of these “other” hatcheries are appropriately part of the cumulative effects analysis and
require more than a perfunctory non-quantitative nod.

The science is clear that the productivity and resiliency of wild populations decreases when
hatchery fish spawn in the wild and that density-dependent effects are due, in part, to
supplementation programs. ISAB at 141. The DEIS generally notes that “there are adverse
effects that would continue to occur from interactions between hatchery and naturally reproduced

58 Great Basin Mine Watch v. Hankins, 456 F. 3d 955, 971 (9th Cir. 2006).
fish” but proceeds to devote the majority of the cumulative effects analysis on this topic to the “adverse” effect of MO3 concerning reduction of hatchery fish leading to decreased juvenile production.  DEIS, pp. 6-44, 6-48.  This is a very narrow lens with which to view such a complex issue and constitutes little more than a general statement about possible effects.

The cumulative effects analysis should analyze how past and present hatchery activities affect wild salmon and steelhead populations and how reasonably foreseeable actions could alleviate density-driven limits and genetic effects on wild salmon and steelhead.  Whether and how these impacts are alleviated will affect the productivity of wild salmon and steelhead which in turn will help determine how effectively the alternatives will meet ESA and recovery goals.

This is just one example.  As a practical matter, the piece-meal approach to different actions taken in the past, and continued in this DEIS, frustrates rather than enables informed decision-making. The fact is that the major actions being implemented in the Columbia basin are interdependent. Their respective impact on salmon and steelhead (positive and negative) depends on what happens in the other major action areas. Together, they have cumulative impacts on salmon and steelhead. The cumulative effects analysis is the only opportunity in the DEIS, as currently constructed, to consider the potential gains/impacts from various actions in a comprehensive, holistic manner. The DEIS is legally insufficient without it.

x.  The DEIS Climate Change Analysis is Legally Insufficient and Does Not Comport with the Court’s Directives

NEPA requires agencies to consider the environmental impact of a project and courts have made clear that obligation extends to climate-related environmental impacts. Additionally, the Action Agencies note that the purpose of the DEIS is, in part, to “respond[] to the Opinion and Order issued by the U.S. District Court for the District of Oregon.” DEIS, Executive Summary, p. 16. A key “purpose” of the DEIS is to “[c]onsider and plan for climate change impacts on resources and on the management of the System.” Id. Despite these guiding directives, the

Action Agencies have failed to produce a climate change analysis that is legally sufficient under NEPA or comports with the Court’s directive.

In its ruling ordering this EIS and a companion biological opinion, the U.S. District Court found that climate change will have a significant negative effect on salmon and steelhead populations and conveyed its expectation that the EIS and the companion biological opinion thoroughly consider climate change effects on ESA-listed salmon and steelhead. The Court described the many ways climate change will impact Columbia River salmon and steelhead:

The best available information indicates that climate change will have significant negative effect on the listed populations of endangered or threatened species. Climate change implications that are likely to have harmful effects on certain of the listed species include: warmer stream temperatures; warmer ocean temperatures; contracting ocean habitat; contracting inland habitat; degradation of estuary habitat; reduced spring and summer stream flows with increased peak river flows; large-scale ecological changes, such as increasing insect infestations and fires affecting forested lands; increased rain with decreased snow; diminishing snow-packs; increased flood flows; and increased susceptibility to fish pathogens and parasitic organisms that are generally not injurious to their host until the fish becomes thermally stressed. Even a single year with detrimental climate conditions can have a devastating effect on the listed salmonids.

184 F.Supp.3d at 874.

After finding that “the best available information indicates that climate change will have a significant negative effect” on endangered and threatened salmon and steelhead in the Columbia and Snake Rivers, the Court described what the climate change analysis must contain. Importantly, the Court indicated that the analysis should be based on the best available science, assess climatic changes as additive to the harm already inflicted by dams and other human activities and assess if and how climatic change will affect actions already being taken to restore endangered salmon. *Id.* That latter point is key as it recognizes that certain measures will be less effective going forward or over a longer-term because of the additive effects of climate change. Further, the Court noted that if climate change impacts on fish populations are large, measures to prevent or moderate them must be large enough to ameliorate the impacts.

The Columbia-Snake Basin is a critical geography for salmon and steelhead populations and actions taken pursuant to this EIS will dictate how resilient these populations will be to climate...
change effects. Actions that are not guaranteed to meaningfully improve SARs or address limiting factors under current conditions will leave salmon and steelhead populations even more vulnerable to the extreme conditions expected with climate change bringing their extinction closer. The DEIS acknowledges that anadromous fish will be negatively affected by climate change and that the preferred alternative’s benefits are likely to be offset by these effects.

Because temperature is such a critical factor to anadromous fish habitat, increases in stream temperature due to increased air temperature and changes in hydrology, including declining snowpack, could further impact fish in all regions. Increased water temperatures could also increase suitable habitat for invasive species (e.g., shad and small mouth bass) that could have adverse impacts to native anadromous fish. Positive effects for anadromous species in this Preferred Alternative could be offset by adverse effects from changes in flow and increased stream temperature due to climate change.

DEIS, p. 7-201.

Yet, contrary to the Court’s direction, there is no analysis of the degree to which climate change will cause added harm to listed species and reduce the effectiveness of mitigation measures, and whether the purported benefits from the preferred alternative are sufficient in light of additional harm and decreased effectiveness. The preferred alternative is not guaranteed to even meet replacement level smolt-to-adult return rates for certain species under current conditions. Climate change effects will make it even more difficult for the preferred alternative to meet those target rates and the benefits that it does offer will likely erode with time. Without the implementation of actions that have larger, more durable benefits, anadromous fish populations will continue to decline.

Neither does the DEIS adequately explain how it can find that the preferred alternative meets its purpose and need to “plan for climate change impacts on resources.” Articulating an inadequate solution that will be less effective with time is not a “plan” to deal with climate change. To better plan for climate change, the DEIS should have identified how climate change will affect specific regions in the Columbia Basin more than others such that certain actions should be prioritized as providing more benefit to salmon and steelhead populations in climate change conditions. It should have then used that information to identify actions sufficient in magnitude and number to address the scale of the climate change threat. For example, the DEIS should have acknowledged the significant level of high-quality cold-water fish habitat in the
Snake River Basin that is expected to remain in the face of climate change and the role that dam removal would play in connecting imperiled fish to that habitat.60

III. CONCLUSION

TU appreciates the magnitude and complexity of this effort. Unfortunately, the DEIS analysis and preferred alternative fall far short of what is necessary to comply with federal law and restore abundant, healthy, and resilient populations of naturally reproducing salmon and steelhead populations. The fact that Columbia Basin salmon and steelhead continue to be imperiled with little significant progress toward recovery despite decades of effort and billions of dollars spent underscores the urgent need for a new direction for the FCRPS, salmon and steelhead and the region.

As detailed in our comments, there are major inadequacies in the information and analysis in the DEIS. Moreover, the preferred alternative in the current DEIS is legally deficient because it does not meet the requirements of federal law. For both of these reasons, we urge the Action Agencies to take the time required to fully develop and analyze the alternatives as required under NEPA, and then select a preferred alternative that includes lower Snake River restoration and dam removal because it best ensures compliance with legal obligations. If the Action Agencies determine that a new preferred alternative would require changed or additional legal authority in order to implement it, they should so indicate and seek such authority. Given the magnitude of the changes needed, this should be accomplished by withdrawing the current DEIS and preparing a new DEIS for public comment and review that addresses the deficiencies identified herein consistent with the best available information.

TU appreciates the opportunity to comment on the DEIS and will continue to work with the Action Agencies and other Columbia Basin stakeholders to recover these magnificent fish and the enormous benefits they provide to communities in the Columbia Basin and beyond.

Brad Throssell, Chair
Trout Unlimited Washington Council

Mark Rogers, Chair
Trout Unlimited, Oregon Council

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60 See for example “Climate Shield Cold-Water Refuge Streams for Native Trout” at https://www.fs.fed.us/rm/boise/AWAE/projects/ClimateShield.html.