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Council on Environmental Quality

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Extended Comments on Columbia River Salmon & Other Native Fish Request for Information

To Whom It May Concern:

As mentioned in our cover letter, the restoration of Columbia River Salmon & Other Native Fish can and must be achieved while also maintaining the maritime transportation, irrigation, hydropower and other benefits provided by the current Columbia Snake River System (CSRS). The removal of the 4 lower Snake River dams (LSRD) is neither warranted nor necessary to recover ESA-listed salmon species. The principal argument for the removal of the LSRD is the theory of delayed mortality, which posits that fish passing through the CSRS dams are "beat up" when they enter the estuary and the ocean. The science associated with this theory is unproven and widely disputed.

A comprehensive Columbia Basin-wide approach to salmon recovery including tributary habitat access and restoration, estuarine habitat restoration, predation and competitor control, hatchery improvements, reintroduction above Grand Coulee and Chief Joseph dams, harvest reductions, ocean life stage research, minimization & mitigation of non-point source pollution, and continued fish passage improvements at all CSRS projects, will provide more benefits to salmon while maintaining the current federally authorizes purposes of the projects, as well as the greater benefits the dams provide for the region and the nation.

The areas where we believe the biggest gains could be made for salmon without impacting the benefits of the CSRS include:

Tributary Habitat Access and Restoration

Tributary habitat restoration plays a crucial role in the recovery of salmon populations in the CSRS. Tributaries serve as critical spawning and rearing grounds for salmon. They provide important features such as clean gravel beds for spawning, cool and clean water for incubation and growth, and sheltered areas for young salmon to develop before heading out to the ocean.

Land use patterns have significantly impacted the tributary habitats basin-wide in the CSRS, resulting in blocked access to tributaries, degradation of riparian zones, and increased water pollution.

Restoring tributary habitat is crucial for the recovery of salmon populations as it:

- Provides the necessary conditions for successful salmon spawning and reproduction. By restoring gravel beds, creating off-channel habitats, and improving water quality, tributary restoration projects enhance the survival and productivity of salmon populations;

- Contributes to the overall resilience of salmon populations. By increasing the availability of diverse and high-quality habitats, salmon have more options for spawning and rearing, which can buffer against environmental variability and improve their chances of survival; and

- Can help address the key limiting factors that salmon face in their life cycle. For example, culvert repair, replacement, or removal can restore tributary flows and connectivity, enabling salmon to access essential spawning and rearing areas that were previously blocked.

Tributary habitat restoration can have broader ecological benefits beyond salmon recovery. Restoring riparian vegetation and improving water quality can enhance overall ecosystem health, benefiting other fish species, aquatic organisms, and wildlife that depend on healthy river systems.

Tributary habitat restoration efforts can create the necessary conditions for successful salmon reproduction, enhance population resilience, and contribute to the overall health of the ecosystem.

Federal programs to help protect and restore tributary habitat such as the USDOT Culvert Repair, Replacement, & Removal Grant Program, USDA Riparian Buffer Program, suite of applicable USFWS Programs (such as but not limited to the Ecosystem Restoration Program, National Fish Habitat Partnership, Wildlife & Sportfish Restoration Program, Pacific Region Wildlife and Sport Fish Restoration Program), and NOAA Habitat Conservation Program should receive increased funding to better protect tributary habitat. A coordinated regional effort could be made to bring these dollars to the Columbia River basin.

Estuarine Habitat Restoration

Restoring the estuary and other estuarine habitats is important for salmon recovery because they:

- Serve as a transition zone between freshwater and marine environments, providing critical nursery areas for young salmon. These habitats offer food resources, shelter, and protection from predators, enabling juvenile salmon to grow and develop before entering the open ocean. By restoring estuarine habitats, we can ensure the availability of suitable rearing areas, increasing the survival rates of juvenile salmon and bolstering their overall population numbers.

- Act as crucial stopover sites during the migration of adult salmon. Adult salmon returning from the ocean to their natal rivers rely on these habitats to rest and regain energy before continuing their journey upstream to spawn. The restoration of estuarine habitats ensures that these resting areas are preserved and maintained, allowing adult salmon to successfully complete their migration and reproduce; and

- Play a significant role in the ecological connectivity of the Columbia Snake River System. They provide a link between upstream and downstream habitats, facilitating the movement of salmon populations and maintaining genetic diversity. Restoring estuarine habitats allows for natural processes and connections within the ecosystem, supporting the long-term viability of salmon populations.

By restoring these critical habitats, we provide essential rearing areas for juvenile salmon, resting sites for adult salmon during migration, and facilitate the ecological connectivity of the entire system. It is a crucial component of comprehensive efforts to restore and conserve salmon populations in the Columbia Snake River System

Federal programs to protect and restore the estuary and estuarine habitats such as the EPA National Estuary Program and NOAA National Estuarine Research Reserve System and Habitat Conservation Program, including Coastal Habitat Restoration and Resilience Grants, should receive increased funding.

Predation and Competitor Control

- Sea Lions: According to the Oregon Department of Fish & Wildlife, sea lions consume significant numbers of fish - up to 44 percent of the Columbia River spring Chinook run, for example. The 2023 forecast for upriver spring Chinook is 198,600 fish according to the Washington Department of Fish & Wildlife. 44% of that is 87,384 fish consumed by sea lions. While the sex ratio of returning salmon can be highly variable, they average 50% females. Therefore, sea lions will eliminate nearly 44,000 egg-producing female spring Chinook in 2023. Spring Chinook females lay between 1,500 – 10,000 eggs with an average of 2,500, sea lions therefore remove 110 million eggs of spring Chinook. 8% of these eggs survive to smolts that begin their migration to the ocean for a total of nearly 9 million juvenile salmon heading downriver if not for sea lions.

  In addition, the California sea lion population along the West Coast (the 'U.S. Stock') is no longer considered at risk and has likely reached its "optimum sustainable population. Similarly, the Eastern stock of Steller sea lion stock is considered healthy and has no special designation under ESA or MMPA. The population has been growing annually since the 1980's and the most recent population estimate was 52,139 non-pups and 19,423 pups. NOAA has concluded that the stock is likely at its Optimum Sustainable Population. Like California sea lions, the Steller sea lions that migrate upriver into the Columbia Basin are all male. Lethal removal of salmon-predating sea lions in the Columbia River occurs but should be a higher priority for our salmon recovery efforts. In 2020, the States and Tribes estimated that there may be up to 290 California sea lions and 130 Steller sea lions predating on salmon in the Columbia Basin, which is less than 0.1 percent and 0.18 percent of their total populations, respectively. Removal of these individuals will have no impact on the population health of either sea lion species and should therefore be expanded with increased funding and implementation.

- Avian Predation: Double-breasted cormorants, Caspian terns and other birds consume considerable numbers of juvenile salmon. Evans et al. (2019) estimated that avian predation accounts for 42% to 70% of total steelhead smolt mortality, suggesting that more steelhead were consumed by avian predators than died from all other mortality sources combined. Results indicate that avian predation, although not the original cause of steelhead declines in the basin, is now a factor limiting the survival of upper Columbia River steelhead.

  In December 2020, the U.S. Fish and Wildlife Service (Service) established a new permit for States and Tribes for the management of double-crested cormorants. The new permit authorizes specific take activities to protect threatened and endangered species from impacts from double-crested cormorants. This permit should be used to its fullest extent by the States and Tribes and should be expanded to include the take of Caspian terns or other avian predators of salmonids;

- Piscine Predation: Non-native species such as the Northern Pike Minnow are known to consume juvenile salmon. Since they are a non-native species to the Pacific Northwest, management actions seeking their extirpation should be maximally implemented; and

- Niche Competition: In addition to direct predation, non-native species such as Smallmouth bass, Largemouth bass, Walleye, Northern pike, Brook trout, Brown trout, Channel catfish, American shad, striped bass all compete for habitat and food with native salmon species. As mentioned above, given these species non-native status, management actions seeking their extirpation should be maximally implemented.

Hatchery Improvements

Improving hatchery operations is of crucial importance to the recovery of salmon populations in the Columbia Snake River System. However, the traditional methods used in hatcheries have sometimes inadvertently contributed to the decline of wild salmon populations. Hatchery fish, bred and raised in captivity, often exhibit reduced genetic diversity, decreased fitness, and altered behavior compared to their wild counterparts. These factors can negatively impact the survival and reproductive success of hatchery-produced salmon.

To address these issues, it is essential to focus on improving hatchery operations. Two key aspects contribute to the success of hatchery programs in supporting salmon recovery:

- **Genetic Diversity:** Maintaining and enhancing genetic diversity in hatchery fish is critical. By incorporating genetic management practices such as incorporating wild broodstock, minimizing inbreeding, and using local fish populations, hatchery-produced salmon can have a higher chance of survival and adaptation to the natural environment.

- **Behavior and Fitness:** Hatchery fish often lack the natural behaviors and survival skills necessary for life in the wild. Hatchery reform efforts aim to mimic natural conditions and provide fish with opportunities for natural selection and imprinting on their natal streams. By incorporating environmental enrichment, reducing hatchery-related

domestication, and implementing programs that promote natural selection, the fitness and survival capabilities of hatchery-produced salmon can be improved.

By addressing genetic concerns, enhancing natural behaviors and fitness, hatcheries can play a more effective role in supporting the restoration and long-term sustainability of salmon populations in the region.

Reintroduction above Grand Coulee and Chief Joseph

The reintroduction of salmon above Grand Coulee Dam and Chief Joseph Dam holds significant importance for the overall recovery of salmon populations in the Columbia Snake River System. The construction of Grand Coulee Dam in the 1930s and Chief Joseph Dam in the 1950s blocked access to vast stretches of historical spawning grounds and disrupted the natural lifecycle of salmon.

Reintroducing salmon above these dams will:

- Allow salmon to regain access to their historical spawning grounds. By reintroducing salmon, we can restore their natural migration patterns and provide them with the opportunity to reproduce in the upper reaches of the rivers. This is particularly significant as the upper tributaries often offer more pristine and suitable habitats for spawning and rearing;

- Help restore ecological balance within the Columbia Snake River System. Salmon play a vital role in nutrient cycling, as their carcasses provide essential nutrients to the surrounding ecosystem when they return from the ocean and spawn. The absence of these nutrients in recent decades has had cascading effects on other species, including birds, mammals, and even plants. Reintroducing salmon would revitalize this nutrient cycle, benefiting the entire ecosystem and promoting the recovery of other species.

Furthermore, the reintroduction of salmon above the dams has cultural and socioeconomic significance. Indigenous communities in the region have long relied on salmon for sustenance, ceremonial practices, and cultural identity. The decline in salmon populations has disproportionately affected these communities, undermining their traditional ways of life. By restoring access to ancestral spawning grounds, we honor their rights and contribute to the preservation of their cultural heritage.

Economically, the return of healthy salmon populations can have a positive impact on the fishing industry and tourism in the region. Salmon fishing has been a significant economic driver, attracting anglers and tourists from around the world. The revival of salmon runs would not only benefit commercial and recreational fishing but also stimulate local economies through increased tourism and related industries.

Harvest Reductions

The reduction and/or elimination of both commercial and recreational non-tribal salmon harvests in the short-term with compensation to fishermen for their lost harvest opportunity would be far more cost effective and non-irrevocable when compared to removal of the 4 LSRD. Commercial fishermen could be compensated in cash while recreational fishermen might be compensated with cash, increased harvest opportunities on other non-salmonid stocks, or increased bounties on non-native fish. While dam removal would irrevocably eliminate maritime transportation and alter agricultural supply chains, forgone harvest opportunities could be restored upon salmon recovery.

Ocean Life Stage Research

The ocean life stage of salmon is a critical and complex phase yet it remains relatively understudied compared to other stages such as spawning and freshwater rearing. There is an urgent need for increased research on the ocean life stage of salmon due to several important reasons.

The ocean life stage represents a significant part of salmon's overall life cycle. During this stage, salmon undergo remarkable physiological changes, including rapid growth, adaptation to saltwater, and preparation for their return to freshwater for spawning. Understanding the factors that influence salmon survival, growth, and behavior in the ocean is therefore vital.

The ocean life stage of salmon is increasingly impacted by various environmental stressors and human activities. Climate change, ocean acidification, pollution, habitat degradation, and overfishing are among the factors that can significantly affect salmon populations during their time in the Pacific Ocean. Robust research is necessary to comprehend the specific effects of these stressors on salmon during their oceanic journey and to develop effective conservation and management strategies.

Advancements in technology and research methodologies present new opportunities to study the ocean life stage of salmon. Techniques such as acoustic telemetry, satellite tagging, genetic analysis, and remote sensing provide unprecedented capabilities for tracking salmon movements, identifying migration patterns, studying feeding habits, and examining the impacts of environmental factors. Leveraging these technological advancements can enhance our understanding of the oceanic phase and inform evidence-based management practices.

Increased research on the ocean life stage of salmon is vital to comprehend the ecological, physiological, and environmental dynamics that shape their survival and population dynamics. By expanding our knowledge of this critical life stage, we can improve salmon recovery efforts.

Mitigation of Non-Point Source Pollution

The mitigation of non-point source pollution plays a crucial role in the recovery of salmon populations in the Columbia Snake River System. But unlike point source pollution, which originates from identifiable and controllable sources, non-point source pollution is challenging to pinpoint and regulate.

Salmon are highly sensitive to water quality. Excessive sedimentation caused by non-point source pollution can smother salmon eggs, suffocate aquatic vegetation, and hinder the ability of fish to find food. Nutrient pollution can trigger harmful algal blooms, creating low oxygen conditions that harm or kill salmon. Chemicals released by all facets of modern life can directly impact salmon by disrupting their reproductive systems, impairing their ability to navigate, and increasing their vulnerability to diseases.

To achieve salmon recovery in the Columbia Snake River System, it is crucial to address and mitigate non-point source pollution. This requires implementing effective land and water management practices that minimize the runoff of pollutants into water bodies. Much has already been accomplished in agriculture with conservation practices in such as the adoption of best management practices including implementing buffer strips, cover crops, and precision application of fertilizers and pesticides to reduce nutrient and sediment runoff and protect water quality.

Some key strategies in other areas include:

- Urban stormwater management: Implementing stormwater management practices in urban areas, including green infrastructure solutions such as rain gardens, permeable pavement, and retention ponds. These measures help capture and treat stormwater runoff, preventing pollutants from entering streams and rivers.

- Riparian zone restoration: Restoring and protecting riparian zones, the areas of land along rivers and streams, helps filter out pollutants, stabilize stream banks, and provide shade and cover for salmon. This can be achieved through tree planting initiatives and fencing off sensitive areas from livestock.

- Education and outreach: Raising awareness among communities, landowners, and stakeholders about the impacts of non-point source pollution on salmon and the importance of implementing pollution reduction strategies. Providing technical assistance and financial incentives can also encourage voluntary adoption of mitigation practices.

By mitigating non-point source pollution, we can improve water quality, enhance the resilience of salmon populations, and support their recovery in the Columbia Snake River System

Continued Fish Passage Improvements at All CSRS Projects

The Corps of Engineers is currently installing fish friendly turbines to units at Ice Harbor dam, and they are already seeing improved juvenile passage. Future improvements are slated for McNary and John Day dams. The Snake River projects, including Lower Monumental, Little Goose and Lower Granite, are not anticipated to receive new turbines for at least 20 years. We recommend prioritizing fish friendly turbines at all of the CSRS projects, including Snake River dams, in the near-term to ensure maximum passage at the projects as quickly as possible.

Response to Key Questions for Input

Lower Snake River

- **What constitutes "restoration" of the Lower Snake River and what steps should the Federal Government take to restore the lower Snake River?**

"Restoration" of the lower Snake River to a free-flowing river such as existed prior to the completion of the 4 LSRD is neither warranted nor justified in terms of the economic and community impacts it would impose on the region. The objective under federal law should be to increase the abundance of salmon species such that they can be delisted from the ESA while maintaining the current authorized purposes and benefits of the CSRS. In this context, "restoration" consists of:

  - Continued improvements of fish passage at projects while maintaining their hydropower and transportation benefits;
  - Maximizing access to and the quality of spawning habitat in the many tributaries feeding the lower Snake River;
  - Maximizing reductions in predators and non-native competitive species;
  - Increased and more effective hatchery practices;
  - Mitigation of non-point source pollution where appropriate; and
  - Water quality management while maintaining an operational transportation channel and preserving sufficient reservoir capacity to generate hydropower.

- **What considerations should inform the Federal Government's approach to restoring the lower Snake River?**

Most importantly, the economic, climate, food security, trade, national security, and underserved & underrepresented community impacts should be fully considered before defining and achieving lower Snake River "restoration". IPNG reiterates that the legal objective should not be some form of lower Snake River restoration but rather the recovery of ESA-listed salmon species to the point that they can be delisted.

- **What information should the Federal Government develop to support discussions in the Northwest and in Congress on the restoration of the Lower Snake River?**

The following information should be robustly developed and assessed:

  - A definition of "restoration" which maintains hydropower, maritime transportation, irrigation and other benefits of the CSRS;
  - The total cost of "restoration" for the federal government, States, and Tribes;
  - The economic impact of "restoration" efforts to the region and nation;
  - Any infrastructure needs and cost to mitigate for lost CSRS benefits;
  - Impacts to BPA rate-payers, especially from underserved & underrepresented communities;
  - Impacts to the agricultural community, including farm workers;
  - Impacts to cities, counties and other municipalities, including those related to reduction in land values, tax base and municipal water supplies;
  - Climate cost of deconstruction of the any federally authorized projects, as well as the costs to construct any new infrastructure needed to replace services;

- National security, food security, and international trade implications; and
- Net carbon emission changes from the "restoration" effort as well as associated mitigation measures for lost CSRS benefits.

Upper Columbia River

- **What considerations should inform the Federal Government's approach to supporting the Upper Columbia River Tribes' reintroduction plan?**

Reintroduction of salmonids, provided such are certain to be non-listed and non-listable species, is an appropriate and necessary step to aid in CSRS salmon recovery and to assist the U.S. in fulfilling its obligations to the Upper Columbia River Tribes. That said, the following considerations should inform reintroduction:

- As stated, the need for reintroduced species to be non-listed and non-listable under the ESA;
- The cost of up- and down-river fish passage at projects;
- The implications of LSRD removal for habitat access and restoration in the Upper Columbia; and
- The role of hatchery production.

Funding

- **What steps should the Federal Government take in response to this commitment (actions and funding to address unmitigated Tribal needs, avoiding future issues with respect to creating inequities, and actions supporting salmon & other fisheries and fish & wildlife programs and infrastructure)?**

- **What considerations should inform the Federal Government's approach to funding and actions to restore fish populations throughout the Columbia River Basin?**

As stated above, the Federal Government should be implementing a comprehensive Columbia Basin-wide approach to salmon including tributary habitat access and restoration, estuarine habitat restoration, predation and competitor control, hatchery improvements, reintroduction above Grand Coulee and Chief Joseph, harvest reductions, ocean life stage research, minimization & mitigation of non-point source pollution, and continued fish passage improvements at all CSRS projects while also maintaining the hydropower, maritime transportation, and other benefits provided by the current CSRS.

Thank you for the opportunity to submit these comments.

Sincerely,

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