Columbia Basin Restoration Initiative

A proposal to the Biden Administration from the "Six Sovereigns"[1]

Confederated Tribes and Bands of the Yakama Nation

Confederated Tribes of the Umatilla Indian Reservation

Confederated Tribes of the Warm Springs Reservation

Nez Perce Tribe

State of Oregon

State of Washington

[1] This proposed Columbia Basin Restoration Initiative (the "CBRI") is informed by decades of collective experience, and represents the collaborative effort of the Six Sovereigns to develop a comprehensive solution to our shared and complex challenges. Moving forward, all Six Sovereigns support the CBRI as the basis for continuing discussions with the federal government and other regional sovereigns and stakeholders.

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Introduction

The past 150 years has brought enormous change to the Columbia River Basin: free-flowing, cool rivers once provided between 10-18 million salmon to the basin. Those salmon nurtured Tribal people's religion, culture, economies and physical health and the health of Columbia Basin ecosystems for thousands of years. For a time, those salmon populations provided significant economic benefits for early non-tribal settlers in the Pacific Northwest. But rapid population growth and development; prior overharvest in non-tribal fisheries; development of millions of acres of land for industrial, commercial, and agricultural uses; construction, and operation of 14 federal dams on the Columbia and Snake Rivers; and installation of hundreds of small private dams and weirs on the tributaries drastically reduced Columbia Basin salmon populations and the many benefits they once provided to the region, its inhabitants, and ecosystems.

While these transformational changes brought economic growth and new uses of the Basin's waters, these changes also brought devastating adverse impacts to the original peoples of the Northwest, the environment, and salmon. When Tribes in good faith signed treaties with the US Government that provided for settlement of millions of acres of aboriginal lands, the Tribes expected that in return their Treaty rights to fish would be honored, and that the right to fish meant there would be fish in the rivers. The settlement occurred, but honoring the Treaty right to fish is long past due. It is time to rebalance the allocation of the natural resources of the Columbia River Basin.

Plummeting wild salmon and steelhead runs resulted in the extinction/extirpation of many stocks while putting others on the brink of extinction. Critical habitats have been lost or rendered inaccessible. Today, this crisis is further exacerbated by climate change, which threatens local and regional ecological, cultural, and economic resilience. Elevated air and water temperature, increased drought, reduced snowpack and poor ocean conditions accelerate the decline of imperiled fish stocks and amplify regulatory constraints, water scarcity, fire risk, invasive species, and pathogens that impact numerous economic sectors.

Wild salmon and steelhead from the Snake River Basin are in dire straits, in spite of the fact that the Snake River Basin contains the largest accessible amount of pristine, protected habitat remaining in the Columbia Basin. As the National Oceanic and Atmospheric Administration (NOAA) has recognized, restoring these stocks to healthy, harvestable populations and reducing the currently high likelihood of further extirpation and allowing them to fully utilize high elevation, climate resilient habitat will require breaching the four Lower Snake River dams. Consistent with the Inslee-Murray recommendations, we must act now to invest in replacing the dams' benefits in order to make breaching a viable policy action. These investments can best ensure a future that includes healthy and abundant salmon and steelhead, reliable and affordable energy systems, a robust economy, and valuable ecosystem services throughout the Columbia River Basin.

To do so, we must take advantage of this unique moment in history. We must commit ourselves to restoring and upholding Tribal and Treaty rights and the sovereign interests of the States. Learning from past mistakes, we must respect the indigenous technological and ecological knowledge of the Tribes who are recognized co-managers of the fishery resource and embrace sound science and engineering to chart a sustainable path forward. Only with bold leadership can we collectively create a future for the Northwest where ecological and cultural resiliency are embraced as a key component of economic prosperity, rather than a casualty of it.

Advancing a Comprehensive Proposal for a Columbia Basin Restoration Initiative

The proposed Columbia Basin Restoration Initiative (CBRI)[2] strives for a true win-win outcome. The CBRI helps bring forward the Tribal people and fisheries left behind in the rush of development by restoring salmon and steelhead with other native species and their habitats and investing in fisheries infrastructure. In so doing, the CBRI also protects and enhances other key service sectors by modernizing and investing in clean energy, agriculture, and transportation, helping restore vital ecosystem functions and services essential for local and regional resilience and adaptation to climate change.

The Initiative provides a framework for a durable long-term strategy that restores salmon and other native fish populations to healthy and abundant levels, ensures a clean energy future, supports local and regional economic resilience, restores ecosystem function and honors longstanding unmet commitments to Tribal Nations.

To achieve this win-win scenario, the status quo is not an option, and inaction is simply unacceptable. Much like the determined steps necessary to decarbonize our energy system, decisive action is necessary to recover Columbia Basin salmon – incremental action will not be effective and will be more costly in the long run. The rapidly changing economic, energy and climate conditions – not to mention the dire status of the fishery resources - require leaders to plan now for inevitable changes during the coming decades. We must act now with necessary federal investments across the whole of government to be successful.

[2] This Initiative directly addresses fish populations originating from the interior Columbia River and its tributaries above Bonneville Dam, though actions may benefit additional fish and wildlife populations.

Purpose

Advance "… a durable long-term strategy to restore salmon and other native fish populations to healthy and abundant levels, honoring Federal commitments to Tribal Nations, delivering affordable and reliable clean power, and meeting the many resilience needs of stakeholders across the region."[3]

The stay of long-running litigation (three decades) over the federal dams and salmon on the Columbia and Snake rivers and the associated mediation process provides an unprecedented opportunity to accomplish the vision offered by the proposed CBRI.

Objectives

Objective 1: Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to "healthy and abundant levels" consistent with NOAA's Columbia Basin Partnership Task Force (CBP) and Rebuilding reports; and (b) complete the actions and investments necessary to secure continuity of services[4] associated with Lower Snake River (LSR) restoration prior to LSR dam breaching.

Objective 2: Ensure that all species, regardless of ESA-listing status, are considered in the comprehensive strategy in a way that improves ecosystem function in the Columbia River and its tributaries.

Objective 3: Ensure interim fish measures minimize additional generational decline of fish populations.

Objective 4: Invest in and support communities and economic sectors (e.g., energy, transportation, agriculture, and recreation) in a manner that: is consistent with meeting decarbonization goals and mandates an integration of renewables; delivers "affordable and clean power"; improves resiliency and adaptability to climate change and supports "the many resilience needs of stakeholders across the region"; and "[honors] commitments to Tribal Nations".

Objective 5: Secure necessary regulatory compliance, authorizations, and appropriations for implementation of the strategy proposed in Objective 1 above with an urgency reflecting the needs of the fish.

Objective 6: Ensure that the strategy proposed in Objective 1 and associated federal actions "honor Federal commitments to Tribal Nations" and address past and ongoing inequities related to the federal hydro system to reflect and uphold federal Treaty and trust responsibilities to Columbia Basin tribes.

[3] Joint Motion for Stay of Litigation, *Nat'l Wildlife Fed'n et al. v. NMFS et al.,* Case No. 3:0l-cv-00640-SI (D. Or. Aug. 4, 2022) (docketed at ECF 2423, 2423-1, 2423-2).

[4] Continuity of services refers to the end service provided, not necessarily the existing means of providing that service. Examples of services associated with Lower Snake River dams include commodity transport, energy (production and transmission), water supply (agriculture, municipal, domestic) and recreation.

Recommended Approach: A Columbia Basin Restoration Initiative

A comprehensive Columbia Basin Restoration Initiative achieves the purpose and objectives described above and advances the following items:

- Ensure that federal hydropower mitigation efforts in the Columbia Basin are directed by joint recommendations of tribal and state fish management entities in coordination with federal fisheries services.
- Significantly increase funding for restoration to levels sufficient to address identified mitigation needs and obligations and support "healthy and abundant" fisheries recovery goals. Address the significant backlog of authorized and recommended, but historically underfunded, actions necessary for the safe and effective operation of critical fisheries infrastructure, assets, and programs.
- Replace the benefits of the LSR dams with due urgency to enable breaching to move forward,[5] and ensure interim fish measures are adequate to minimize additional generational decline of fish populations.
- Implement the Upper Columbia United Tribes' Phase Two Implementation Plan to reintroduce and provide passage of priority anadromous species above Chief Joseph and Grand Coulee dams.
- Establish a long-term biological performance monitoring and reporting program to measure progress and support accountability towards the qualitative and quantitative recovery and abundance goals identified in the CBP Phase II Report.

Implementation of the proposed Initiative should be structured to ensure a transparent "whole of government" approach, where federal agencies coordinate to use their funds and authorities to prevent salmon extinction and restore healthy and abundant Columbia Basin fisheries.

The Administration should use all available funding tools to implement the elements of a comprehensive approach to prevent salmon extinction and restore salmon in the Columbia Basin, including but not limited to opportunities associated with the President's budget, Congressional appropriations, a cross-cut budget approach, an expansion of funding available through the Northwest Power Act Fish and Wildlife Program by expanded use and/or adjusted authorities for use of (4)(h)(10)(c) crediting, and by better reflecting the Northwest Power Act's goals for equitable treatment for fish and wildlife with other purposes of the hydrosystem.[6] Funds that are collected by BPA from ratepayers to meet fish and wildlife obligations should be fully spent on fish and wildlife actions.

Some parts of the proposed Initiative can and should be advanced by the President and federal agencies under existing authorities and appropriations. Other parts will require Congressional support through additional appropriations or legislation, or both. Time is of the essence in both cases to meet the urgent needs of Columbia Basin fisheries and communities, and the inevitable changes facing the Region.

[5] NOAA Rebuilding Report, p. 21.
[6] Northwest Power Act Section 4(h).

Key Elements and Actions

Objective 1: "*Develop and advance an urgent, comprehensive strategy to (a) restore salmon and steelhead to "healthy and abundant levels" consistent with NOAA's Columbia Basin Partnership Task Force (CBP) and Rebuilding reports; and (b) complete the actions and investments necessary to secure continuity of services[7] associated with Lower Snake River (LSR) restoration prior to LSR dam breaching."*

Key Elements and Actions for Objective 1(a)

- Establish accountability for clear and measurable fisheries rebuilding goals that reflect "healthy and abundant" levels as per the overarching federal commitment.
    - Utilize NOAA Rebuilding Report to frame the starting point for "healthy and abundant" levels, consistent with the CBP mid-level abundance goals[8] and the NPCC F&W Program 2020 Addendum (e.g., 5 million fish and 2-6% SAR).
- Identify and advance centerpiece actions from NOAA Rebuilding Report.
    - For Snake River stocks, the centerpiece action identified by NOAA is LSR restoration via breaching the four lower Snake River dams (subsequent to replacement or mitigation of lower Snake River dams' services as described in the Inslee-Murray recommendations). See Appendix A for additional context and details.
    - For upper Columbia River stocks, the centerpiece action identified by NOAA is reintroducing fish into blocked areas, starting with implementation of the Upper Columbia United Tribes' Phase Two Implementation Plan.
    - For mid-Columbia River stocks, including but not limited to the mainstem and tributary habitats from Bonneville to McNary Dams, the centerpiece action identified by NOAA is improved passage through lower mainstem dams coupled with improved water quality and quantity and passage survival in focused areas of low- to mid-elevation tributary habitats.
- Identify and advance additional necessary fish actions consistent with NOAA Rebuilding Report and the habitat and predation actions identified in the NOAA 2022 5-Year Status Reviews for Columbia River stocks (see Appendix A for additional details). These actions include:
    - Estuary and tributary habitat protection and restoration, including improved water quality and quantity and fish passage.
    - Fish passage at other priority sites (e.g., Yakima River, Upper and Lower Deschutes River, Walla Walla River watershed, Dworshak Dam, Hells Canyon dams).

[7] Continuity of services refers to the end service provided, not necessarily the existing means of providing that service. Examples of services associated with Lower Snake River dams include commodity transport, energy (production and transmission), water supply (agriculture, municipal, domestic) and recreation.

[8] In addition to CBP abundance goals, Table 1 of CBP Phase II Report states: "Within 25 years reverse and prevent declines of both listed and non-listed salmon and steelhead; achieve delisting for at least some salmon ESUs and steelhead DPSs; make significant and measurable progress toward broad sense recovery of all salmon and steelhead; make significant progress toward rebuilding spatial distribution and run timing of salmon and steelhead at local and Basin wide scales, including to study, develop, and implement plans for restoring salmon and steelhead to currently inaccessible areas within their historic range; and rebuild salmon and steelhead runs that are adaptive and resilient to climate change and other environmental perturbations."

- Predator reduction and control.
- Interim (pre LSR dam breach) and long term (post LSR dam breach) Columbia River System (CRS) operations that optimize fish passage and survival (direct/delayed) and water quality characteristics while meeting other authorized purposes.
    - Operate the CRS with ecosystem function and fish survival as core priorities.
    - Ensure interim CRS operations help minimize additional generational decline of fish populations.
    - Ensure long-term CRS operations help optimize generational growth of fish populations necessary to meet "healthy and abundant levels".
- Focused hatchery and harvest actions, identified through existing forums, including necessary investments to remedy infrastructure maintenance backlogs and necessary investments to improve fishery forecasting and monitoring.
    - Address the significant backlog of authorized and recommended, but historically underfunded, actions necessary for the safe and effective operation of critical fisheries infrastructure, assets, and programs.
- Focused actions to better understand and forecast ocean conditions and improve or mitigate for those conditions where possible for salmon.
- Enhance the stability and economic contribution and resilience of fisheries by improving the status of weak stocks within mixed stock fisheries, in a manner that reduces constraints on harvest.

Key Elements and Actions for Objective 1(b)

". . . complete the actions and investments necessary to secure continuity of services associated with Lower Snake River (LSR) restoration prior to LSR dam breaching."

- In coordination with appropriate entities, build upon existing information to identify and advance investments and actions necessary to secure continuity of services provided by the LSR dams and reservoirs prior to breaching.
- Identify a federal lead agency or agencies to develop detailed plans to fund and implement each service.
- Address the potential loss of energy and capacity from LSR dams to inform short- and long-term power and transmission planning (see Appendix A for additional details). Invest in a clean energy portfolio that would rely primarily on solar and wind generation, energy storage, energy efficiency, and demand response.[9]
- In coordination with affected sovereigns, craft and implement a strategy to replace to the extent possible the other system services provided by each LSR dam or mitigate the impacts of their loss: commodity transport, water supply, and recreation (see Appendix A for additional details).

[9] For this and all replacement services, it will be important to seek to develop new energy, transportation, and community infrastructure projects in a manner that respects the sovereignty and rights of all parties, including Tribal treaty rights, and seeks to afford economic opportunities to Tribal communities (see additional details under that specific objective).

Objective 2: *Ensure that all native species, regardless of listing status, are considered in the comprehensive strategy in a way that improves ecosystem function in the Columbia River and its tributaries.*

Key Elements and Actions for Objective 2

As noted in the NOAA Rebuilding Report,[10] restoring tributary, mainstem and estuary ecosystem functions necessary to rebuild wild salmon and steelhead will benefit and help restore other native aquatic species in the Columbia Basin.

- Implementing Key Elements and Actions described for Objective 1(a) is critical for the health of other native aquatic species in the Basin.
- Restore and protect instream flows in tributary and mainstem hydrology – the volume and timing of river flows – to increase available habitat, improve habitat and water quality, and better fit river flows to native aquatic species ecology and life cycle needs.
- Rebuild salmon and steelhead runs to improve ecosystem function by restoring vital marine nutrient transport into interior habitats and provide vital prey (e.g., eggs and juvenile salmon) for other native fish (e.g., bull trout) as well as provide vital prey (e.g., adult salmon) for Southern Resident Killer Whales and other marine mammals.
- Implement Pacific Lamprey mitigation actions (Tribal Pacific Lamprey Restoration Plan; Oregon Department of Fish and Wildlife's Conservation Plan for Lampreys) (see Appendix A for additional details).
    - Develop, fund, and implement a regional supplementation/augmentation plan containing translocation and artificial propagation protocols, while concurrently developing aquaculture facilities.
    - Modernize and fund passage structures at artificial barriers and obstructions as necessary for lamprey passage. Much of the passage at mainstem and tributary dams and diversions intended for salmon and steelhead are currently inadequate for Pacific Lamprey.
- Implement sturgeon mitigation actions (see Appendix A for additional details).
    - Fund the NPCC Regional White Sturgeon Framework recommendations.[11] Due to past budget cuts and funding that has not kept pace with inflation, the scope of white sturgeon work, including crucial monitoring, has been dramatically reduced.
    - Consistent with regional sturgeon framework recommendations, support the White Sturgeon Hatchery Master Plan,[12] which describes a sturgeon hatchery program designed to help mitigate impacts of development and operation of the Columbia River System (CRS) on sturgeon population productivity and fishery opportunities in lower mid-Columbia River and

[10] See NOAA Rebuilding Report response to *Question 8: If the actions identified in Question 5 are implemented comprehensively for salmon and steelhead, how would they benefit or degrade conditions for other species?*
[11] Beamesderfer, R., and P. Anders. "Columbia Basin White Sturgeon Planning Framework. Northwest Power and Conservation Council, Portland, OR." (2013).
[12] CRITFC (Columbia River Inter-Tribal Fish Commission). 2015. White Sturgeon hatchery Step I Master Plan for lower Columbia and Snake River impoundments. Portland, Oregon. Prepared for the Northwest Power and Conservation Council. Portland, Oregon.

lower Snake River reservoirs. Ensure funding for the design and construction of a white sturgeon hatchery on the Yakama Reservation.

- Address water quality issues, such as methyl mercury, that limit consumption of long-lived species like sturgeon.

- Develop, update, and invest in projects and programs to restore native resident fish and shellfish (see Appendix A for additional details).

Objective 3: *Ensure interim fish measures are adequate to minimize additional generational decline of fish populations.*

Key Elements and Actions for Objective 3

(See Appendix A for additional details.)

- The proposed CBRI includes an expedited effort to make the investments necessary to enable breach (i.e., key elements/actions identified and set in motion for implementation to address continuity of services, engineering, permitting, authorizations, appropriations) to move forward with urgency (for example, two fish generations) to address extinction risks and facilitate recovery.

- The "Interim Period" occurs from expiration of the current stay (August 31, 2023) until the four Lower Snake River dams are breached. Interim period operations for the CRS must improve fish survival and productivity beyond the 2023 stay-based operations to "minimize additional generational decline of fish populations" and reduce extinction risk until centerpiece and other fish actions are implemented. Necessary interim and long-term CRS operations are detailed in Table 1 in Appendix A.[13] The following summary highlights key elements of interim CRS operations.

  - Spill: Prioritize surface passage through maximized (125% Total Dissolved Gas) spring-period spill; Moderate (Performance Standard) summer-period spill through end of August; and low (spillway weir) fall and winter-period spill (allowing suspension of fall – winter spill for maintenance, freezing conditions, and defined energy demand/reliability situations).

  - Target Minimum Operating Pool (MOP) elevations during spring and summer juvenile migration periods.

  - Minimize degraded in-river and fish passage conditions resulting from maintenance/outages.

  - Prioritize fish operations relative to other authorized purposes when making in-season adaptive management decisions.

[13] These CRS operations are responsive to the urgent conservation crisis facing priority fish stocks, and the urgent need for an expedited pathway to fully implement centerpiece and other essential fish actions. If this urgency is reflected in an expedited pathway (no more than two fish generations; 8 to 10 years) to secure continuity of services that enables completion of LSR restoration via 4-dam breaching, then some interim CRS operations may be moderated accordingly.

- Advance additional off-site fish conservation measures associated with cross-cut budgeting and infusion of funds associated with Bonneville Power Administration's Fish and Wildlife Program.
- Expedite implementation of non-Columbia River System operations actions identified in earlier objective, particularly those that can provide more immediate benefits for multiple populations across the CR Basin (e.g., additional predator control).
- Develop and fund emergency hatchery programs that may be necessary to reduce extinction risk of highly vulnerable populations if environmental conditions deteriorate (e.g., drought, reduced snowpack, poor ocean conditions) during the interim period before LSR restoration.
- Recognize that additional fish conservation measures (CRS and other) might be necessary and triggered in real-time if interim environmental conditions deteriorate (drought coupled with poor ocean, or LSR restoration is delayed beyond two fish generations).

Objective 4: *Invest in and support communities and economic sectors (e.g., energy, transportation, agriculture, and recreation) in a manner that is consistent with meeting decarbonization goals and mandates and integration of renewables, delivers "affordable and clean power", improves resiliency and adaptability to climate change and supports "the many resilience needs of stakeholders across the region", and "[honors] commitments to Tribal Nations".*[14]

Key Elements and Actions for Objective 4

This approach is needed for a "win-win" comprehensive strategy: a strong and expanding regional economy integrated with salmon restored to healthy and abundant levels and watersheds resilient to climate change. A comprehensive strategy must:

- Ensure actions that benefit fish and climate-resilient watershed health, both essential for economic resilience, are coupled with investments and actions to secure other important elements of economic resilience, such as affordable and reliable decarbonized energy, efficient commodity transport and adequate water supply.
- Include investments complementary to this shifting energy landscape, as well as modernization of other economic sectors, and help reduce associated local and regional economic burdens.
- Address siting considerations to help address long-standing tribal inequities and help minimize ecological harm, investments to help restore ecosystem functions and services, and investments to help modernize economic sectors for resilience and adaptability to climate change.
- Significantly increase investments in regional energy efficiency and demand response to reduce the need for additional generation resources and increase the flexibility of the system as a whole.

Objective 5: *Secure necessary regulatory compliance, authorizations, and appropriations for implementation of the strategy with an urgency reflecting the needs of the fish.*

[14] As noted in objectives section above, the quotations here are from Joint Motion for Stay of Litigation, *Nat'l Wildlife Fed'n et al. v. NMFS et al.,* Case No. 3:0l-cv-00640-SI (D. Or. Aug. 4, 2022) (docketed at ECF 2423, 2423-1, 2423-2).

Key Elements and Actions for Objective 5

- Regulatory Compliance
    - Determine what, if any, changes or additions would be needed to existing regulatory compliance documents (e.g., NEPA, ESA) for coverage of proposed CBRI components.
    - Begin necessary steps for regulatory compliance to ensure coverage is secured prior to decisional requirements for implementation.
- Authorizations and Appropriations
    - The US Army Corps of Engineers (USACE) should update/conduct engineering analyses for four dam breach under its existing authority and with existing funding. Upon adoption of the CBRI by the federal government, any additional funding or authorization needed to implement the CBRI would be identified and secured timely as a first step for implementation the CBRI.
    - Existing appropriations (e.g., IRA, USACE appropriations) should be prioritized, consistent with grant and other procedural requirements, for actions complementary to restoration of the LSR.
    - Determine whether additional authorization and appropriations are necessary to implement the CBRI.
    - Seek and secure those additional necessary authorizations and appropriations.
- Development and implementation of the CBRI timeline
    - Complete development of schedule and timeline by August 2023, including prioritized development of a 10-year budget and additional near-term funding commitments in 2024 and 2025, to be completed as CBRI first-steps shortly after Aug 2023.
    - Secure necessary authorizations and appropriations for implementation by August 2024.
        - Complete any necessary regulatory compliance on a timeline that supports this deadline.
    - Specific to LSR restoration implementation:
        - Complete investments and infrastructure developments necessary to secure continuity of services by January 2030;
        - Consistent with timelines securing continuity of services, expedite engineering deconstruction and stabilization of landscapes and infrastructure associated with LSR restoration by 2031.
    - Specific to UCR blocked area fish reintroductions:
        - Fund and implement Upper Columbia Phase 2 Implementation Plan in coordination with appropriate and interested sovereigns consistent with the P2IP's timeline.
    - For FY25, the Administration should request full funding from Congress for authorized, regionally recommended fisheries needs, consistent with the CBRI.

Objective 6: *Ensure that the strategy and associated federal actions "honor Federal commitments to Tribal Nations" and address past and ongoing inequities related to Columbia Basin development to reflect and uphold federal Treaty and trust responsibilities to Columbia Basin tribes.*

Key Elements and Actions for Objective 6

- Restore "healthy and abundant" native fish populations by implementing Key Elements and Actions described for objectives 1, 2 and 3 as an essential start to addressing Objective 6.
- Carefully consider and address long-standing inequities experienced by Tribes associated with siting, development, and operation of the CRS, both for the past and future (from Six Sovereigns submittal on Economic Resilience).
- Seek to develop new energy, transportation, and community infrastructure in a manner that respects the sovereignty and rights of all parties, protects Tribal treaty rights to fish, hunt, and gather, and seeks to afford economic opportunities to Tribal communities. Doing so will complement and enhance the benefits realized by non-tribal communities and the region as a whole (from Six Sovereigns submittal on Economic Resilience).
- Wherever possible, establish non-competitive Tribal allocations of Columbia Basin restoration-related funds (e.g. funds authorized under Section 40001 of the IRA).[15]
- Remove USG administrative barriers and maximize Tribal co-management opportunities and actions.
- Ensure that Tribes have the resources to rebuild a fishing economy throughout usual and accustomed fishing areas in an environment altered by reservoirs and hatchery locations.
- Develop effective internal federal coordination approaches and funding strategies to support appropriate Nation-to-Nation relationships.

[15] The federal government has a trust responsibility to the Tribes to ensure that treaty-reserved rights and resources are protected and restored. Direct Tribal allocations are consistent with a Nation-to-Nation relationship, and will allow the tribes to protect these resources in the face of climate change and provide needed flexibility. Tribes are often forced to compete for funds despite having only limited capacity to apply for and manage numerous awards. The tribes have identified and designed millions of dollars in on-the-ground projects that can immediately contribute to salmon recovery if the funding is available.

Appendix A: Additional context and details for proposed Comprehensive Columbia Basin Restoration Initiative

Important Context for the CBRI fish actions is provided in the NOAA Rebuilding Report:

> "To make progress towards healthy and harvestable stocks it is essential that the comprehensive suite of management actions includes:
>
> - Significant reductions in direct and indirect mortality from mainstem dams, including restoration of the lower Snake River through dam breaching.
> - Management of predator and competitor numbers and feeding opportunities.
> - Focused tributary and estuarine habitat and water quality restoration and protection.
> - Passage and reintroduction into priority blocked areas, including the upper Columbia River (and, potentially, the Middle Snake River and Yakima River).
> - Focused hatchery and harvest reform.
>
> It will be essential that we implement all these actions, and that we do so at a large scale. While efforts in all these areas have been underway, there is a need in most cases to substantially enhance and focus implementation, and to incorporate new and emerging knowledge about effective implementation. These actions are needed to provide the highest likelihood of reversing near-term productivity declines and rebuilding towards healthy and harvestable runs in the face of climate change."

Additional details for CBRI regarding NOAA centerpiece fish actions:

Snake River stocks: breaching the four LSR dams to restore the LSR

- Secure continuity of key services currently provided by the dams, including provisions to ensure that these services are in place prior to breaching (see additional details under the continuity of services objective) in order to allow lower Snake River dam breaching to move forward with urgency (for example, within 8-10 years, or two generations of chinook salmon) to avoid additional generational decline.
- The NOAA Rebuilding Report concludes that achieving the "highest and only reasonable certainty"[16] of restoring Snake River salmon and steelhead to healthy and abundant levels would require restoration of the Lower Snake River and its migration corridor by breaching the four Lower Snake River dams as part of a comprehensive suite of actions for the Basin. The Rebuilding Report found that breaching is an essential "centerpiece" action for Snake River stocks. Current and projected fish status (as described in the NOAA Rebuilding Report) clarifies that implementation of this centerpiece action is urgent, but implementation can be sequenced appropriately to secure continuity of services provided by the dams if necessary investments are expedited.

[16] "We are also confident that the comprehensive suite of actions identified in Question 5 provides the highest and only reasonable certainty of achieving survival, productivity, and capacity improvements necessary to realize the CBP's long-term mid-range abundance goals." NOAA Rebuilding Report (NOAA 2022).

- Other actions can and must complement breaching, but the NOAA Rebuilding Report concluded that breaching the four dams is a necessary component of any basin-wide plan to restore healthy and abundant salmon and steelhead. Examples of complementary actions for helping restore the LSR include rehabilitation of lower reaches of currently impounded tributaries, stabilization and reseeding of exposed terrain, sediment management, and invasive species management.
- Necessary LSR dams breach planning steps will include the following high-level elements worked on in concert, but not necessarily all completed during development of an implementation strategy for the proposed CBRI. Several of these are next-step implementation components of a comprehensive strategy (recognizing that policy positions can be reserved until details are adequately fleshed out during the remainder of the stay):
    - The USACE should begin advancing an engineering analysis for four dam breach under its existing authority and with existing funding in order to be prepared to move ahead with a plan of action in tandem with USG regulatory compliance.
    - If USACE or other agencies conclude that they need additional authority from Congress to proceed with actions necessary to restore the Lower Snake River corridor, they should specifically identify the need for, scope, and timing for such authority. If additional appropriations are necessary for corridor restoration, the agencies should identify and seek these appropriations.

Upper CR stocks: provide passage and reintroduction into blocked areas

- Reintroduce and provide passage of priority anadromous species in the Upper Columbia above Chief Joseph and Grand Coulee dams through implementation of the Upper Columbia United Tribes' Phase Two Implementation Plan.
- Finalize strategy and fully articulate federal support for the Upper Columbia United Tribes' Phase Two Implementation Plan for reintroduction in the Upper Columbia blocked areas. Details of this commitment are being worked out through the U.S.G.'s ongoing mediation process in close consultation with UCUT Tribes and the State of Washington.

Extant mid- and upper- CR stocks below the blocked area: improve passage and water quality and quantity

- Maximizing functional tributary habitats (primarily instream flows, water quality, and fish passage improvements) and improving passage in the lower mainstem Columbia River is necessary to provide the highest likelihood for achieving mid-range CBP goals. For example, for high-risk Yakima basin stocks, smolt survival through the Yakima River should be significantly increased by increasing spring flows, implementing structural and operations improvements at federal diversion dams, and targeting specific habitat improvements. These actions address habitat threats in tributaries and help reduce direct and indirect effects of the hydrosystem threat in the mainstem (NOAA Rebuilding Report). These same concerns apply to the other tributaries on the Oregon and Washington side of the Columbia River.
- Mid-Columbia Habitat Conservation Plans (HCPs) contain adaptive management language to ensure course corrections, as necessary, during the term of those agreements. Signatories to those agreements should consider whether there is room for improvements in operations at those facilities, or what additional mitigation actions can contribute towards achieving CBP goals within current funding, and with additional federal funding. Implement actions to support key

fish habitat in cold water areas including dredging tributary river mouths and reconfiguring habitat in these areas to support native vegetation, safer resting areas, and improved connectivity between cold water areas and the main river.

Additional details for other fish actions:

Ensure "whole of government" approach by using all funding tools available (e.g., President's budget, Congressional appropriations, cross-cut budget, adjustments to, or more liberal interpretation of, existing 4(h)(10)(c) crediting under the NPA).

Tributary Habitat Protection and Restoration

- Increase mitigation and restoration funding to levels sufficient to address identified needs and obligations and support "healthy and abundant" fisheries recovery goals.
    - Requires approximately 2-3 times the current level of funding;
    - Should be implemented through a federal cross-cut budget.
- Ensure mitigation efforts are directed by State and Tribal fish management entities in coordination with federal fisheries services. Transition implementation of NPCC's Fish and Wildlife Program from BPA to state and tribal fisheries co-managers.
- Funds that are collected to meet fish and wildlife obligations should be fully spent on fish and wildlife actions. In their latest project review process, the Northwest Power and Conservation Council recommended "that Bonneville develop flexibility in its budget management protocols to allow the budget available for fish and wildlife mitigation be fully expended on fish and wildlife mitigation within the biennial rate case and report progress to the Council."
- Federal programs should consider flexibility in funding requirements to support large-scale, multi-year projects to achieve the level of landscape scale change that is required to restore salmon and steelhead in habitat limited watersheds.
- Establish long-term biological performance monitoring and reporting to measure progress over time.
- Continue and expand tributary habitat protection and restoration efforts and funding throughout the basin, including for mid and upper Columbia ESUs, for listed priority species and non-listed species (including but not limited to lamprey, sturgeon and mussels) important to Treaty Tribes.
- Fully fund and implement regional recovery plans on an aggressive timeline and recognize that the recommendations in the recovery plans are consistent with the proposed CBRI.
- As part of this effort, fund and implement deferred operations and maintenance and infrastructure actions identified in the Treaty Tribes' "Billion Dollar Backlog".[17]

[17] Columbia River Inter-Tribal Fish Commission, *Overview of Columbia River USACE Fish Budget Needs* (2022), available at https://critfc.org/wp-content/uploads/2022/09/CRITFC-USACE-Fish-Budget_2022.pdf. Summary of Columbia Basin Federal Hatcheries Infrastructure Needs – Deferred Maintenance and Capital Fixes (2021) (originally prepared by the *US v. Oregon* Production Advisory Committee, and subsequently advanced by the NPCC to various congressional members in 2021 – *see e.g.* July 13, 2021 Letter from NPCC to Sen. Mike Crapo).

Estuary Habitat Protection and Restoration

The following overarching estuary habitat protection and restoration needs have been highlighted in a variety of regional plans and assessments, and can help guide estuary habitat protection and restoration actions:

- Increase funding for Columbia River estuary restoration. Estuary restoration improves salmon prey availability and reduces predation by providing alternative food sources (increased abundance of other prey such as anchovy).
- Identify and implement actions to improve the effectiveness of existing and new estuary habitat protection and restoration efforts, including best methods for identifying restoration locations, potential projects, funding sources, and implementation.
- Determine where specific new or different programs or management approaches would be necessary or beneficial.

The BPA Columbia River Estuary Ecosystem Restoration Program Final Environmental Assessment (July 2016) (EA), stated that, "Under the Proposed Action, the agencies would use this EA to help evaluate the potential environmental impacts and support NEPA responsibilities for their decisions on proposed estuary restoration actions and projects." Table 1 in the EA identifies Actions and Project Categories for Estuary Restoration Projects.

The CRITFC Wy-Kan-Ush-Mi- Wa-Kish-Wit, Spirit of the Salmon Plan (2014) uses a larger, more comprehensive ecosystem approach to salmon recovery with incorporation of new scientific tools and findings and climate change considerations. A few key actions highlighted in this plan are:

- Increase in land acquisition to achieve the goal of habitat restoration.
- Implementation of moratoriums on floodplain development.
- Taking actions that create and support diversity and longer periods of use by salmon.
- Addressing the connectivity and cumulative effects of upriver activities, e.g., hydropower operations and estuary conditions.

The Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead (NMFS 2011) identifies in Chapter 5 "23 management actions that, together, address the range of threats salmonids in the estuary face, from altered habitat-forming processes to physical structures in the estuary, changes in the food web, and poor water quality. If implemented, the actions presented in this chapter would reduce the impacts of threats to salmonids during their migration and residency in the estuary and plume."

In addition, partnering with some longstanding estuary-focused organizations could prove beneficial for evaluation of future estuary habitat protection and restoration actions. The Center for Coastal Margin Observation and Prediction (CMOP) is an ocean and estuary research program dedicated to further understanding the linkage between the Columbia River and the Pacific Ocean. CMOP uses remote sensors, models, and open data access in ways that help stakeholders manage ecosystems, facilitate sustainable development, and protect lives and livelihoods in our changing environment. The CMOP observation network consists of buoys and dock-based fixed stations in the estuary and plume. Physical parameters such as salinity, temperature, water levels, and currents have been measured and recorded since 1996 and biogeochemical parameters such as chlorophyll, turbidity, nitrate, and dissolved oxygen since 2008. These measurements provide a record of variability and change in this important ecosystem. CMOP stations can be used for deploying new monitoring equipment and for collecting water samples for lab analysis.

The Lower Columbia River Estuary Partnership has a mission "to restore and care for the waters and ecosystems of the lower Columbia River, for current and future generations of fish, wildlife, and people." The Columbia River Estuary Study Taskforce (CREST) has a mission - to provide locally-based, high quality environmental planning, habitat restoration and research services to the Columbia-Pacific Region. Both of these organizations could prove to be valuable partners.

Water Quality/Quantity

EPA is responsible for determining the Total Maximum Daily Load (TMDL) for temperature in the Columbia and Snake rivers. The most recent TMDL shows that state water quality criteria that protect migration and spawning are frequently exceeded, and the EPA cited climate change and dam impacts as the dominant sources of impairment. Although the EPA stated that tributary restoration could only lead to modest improvements in mainstem, the TMDL identifies 23 tributaries that provide cold water refuge from high mainstem temperatures for migrating adult salmon and steelhead. The TMDL sets temperature, flow, and cold-water volume targets for 13 of these tributaries to maintain and increase cold water refuge in the lower Columbia River.

On September 2021, EPA issued NPDES permits for the four Lower Snake River dams and will issue permits effective July 1, 2023, for the Lower Columbia River dams that are operated by the U.S. Corps of Engineers (USACE). The NPDES permits include a requirement to meet heat load effluent limits as mandated by the Washington and Oregon's 401 certification conditions. Water Quality Attainment Plans will be developed within the next year, which are expected to include detailed temperature control strategies to meet state water quality standards. Actions needed to ensure the TMDL is not exceeded include:

- Support for the states of Oregon and Washington for developing plans for the TMDL, including the tributaries identified as cold-water refuge.
- Support for Tribal leadership in collaboration with the States of OR and WA on implementation of the temperature TMDL.
- Funding the water quality Restoration Plans that land managers have to develop as a result of having water bodies on the 303(d) list and for tributary TMDLs.

Water quality in the Columbia Basin is also significantly impacted by the presence of toxic substances in the Columbia River and its tributaries. Current priorities to address toxics concerns should be supported via funding and collaborative participation, and include:

- Fund and implement a Columbia River Long-Term Monitoring Program to assess toxin levels in fish tissue and water quality in the mainstem Columbia and Snake rivers. Yakama Nation is partnering with CRITFC, USGS, Oregon DEQ, and Washington Department of Ecology on this work. The purpose is to monitor toxic substances, including contaminants behind dams and throughout the pools, in perpetuity to establish trends and guide ecosystem recovery resulting in clean, healthy fish that are safe to eat.
- Fund and implement a Columbia Basin Toxics Reduction Program, which includes clean-up efforts targeted at Superfund Sites.
- Explore hydro system operations that maximize use of Dworshak water for cooling lower Snake River in August.

- Address water quality issues, such as methyl mercury, that render long-lived species like sturgeon unconsumable.
- Finally, EPA should collaborate with the Washington Department of Ecology and Oregon Department of Environmental Quality to ensure that rules on total dissolved gas management associated with spill at the lower Snake and Columbia River dams provide sufficient flexibility to permit spill (both interim and long-term at lower Columbia projects) consistent with preventing further generational declines of salmon and steelhead populations.

Reintroductions and Passage into Blocked Areas (in addition to upper Columbia blocked area discussed above)

- Develop plan, or expedite/improve funding for existing plans, for passage and reintroduction of priority species into other historically important fish production areas of the basin currently blocked by dams lacking ladders and/or juvenile bypass facilities, with priority focus on the Yakima River, North Fork Clearwater River, Walla Walla River and tributaries and middle Snake River.
- Consider timelines and sequencing consistent with binding agreements (e.g., IPC settlement agreement with OR regarding Hells Canyon complex of dams).
- Determine the extent to which the plan can be implemented using existing authorities and where specific new or different authorities would be necessary or beneficial.
- Determine requirements for compliance with State statutes governing reintroduction of listed species and take necessary actions to resolve.

Predator & Invasive Species Reduction and Control

- Develop and implement specific strategies to fund predation control priorities and projects and identify continuing funding sources. Fully fund existing actions in priority areas, such as below Bonneville Dam, Blalock islands, East Sand Island.
- Establish and fund a Predator & Invasive Species Management Task Force comprised of the Columbia Basin tribal and state fisheries comanagers and the federal fisheries agencies, and other appropriate tribal and local entities and organizations as appropriate, to determine where specific new or different authorities, programs, or management approaches are necessary or beneficial, particularly for new and emerging threats.
- Increase USACE funding for predator management and coordinate their predator management programs through a central forum to ensure that funding is targeting the worst offenders and benefits to life-cycle survival are used as the metric of success so that we are not merely switching the consumers rather than reducing the consumption of juvenile migrating fish.
    - Fund the CRITFC identified for predator management and deterrence structures in its USACE Fish Budget Needs report.
    - Ensure strong coordination between the USACE predator management programs and those funded through BPA and the mid-Columbia PUDs.
- For pinniped predation, provide sufficient annual funding to fully implement the program specified under the new permit (i.e., funding to fully implement existing authority of MMPA Section 120(f)). Consider future permit amendments to address emerging needs, as necessary.

- For avian predators, finalize, fund and implement a sustained management effort[18] to reduce impacts to life-cycle survival in areas of high predation with appropriate monitoring of action effectiveness. Address any jurisdictional and permitting issues through enhanced collaboration across jurisdictions from a whole-of-government approach, including funding new research to support policy recommendations to improve management of bird colonies and reduce predation.
- American white pelicans have been increasing in numbers in Columbia River tributaries during the peak of the out-migration of juvenile salmon. While this is surely impacting ESA-listed salmon and steelhead the exact magnitude of that impact is not fully understood and should be further investigated.
- For piscine predation, implement a coordinated, large-scale program to investigate and quantify the overall predatory impact of multiple piscine predators (e.g., Northern Pikeminnow, Smallmouth Bass, Walleye) to juvenile salmonid stocks in the lower and mid-Columbia River Basin.
    - Develop and fund a robust Columbia River Northern Pike and invasive non-native fishes monitoring project that leverages current suppression, monitoring, and research activities with new projects to fill data gaps and ensure enhanced effectiveness.
    - Implement aggressive actions to control non-native fish populations that are preying on juvenile salmon and steelhead.

Hatchery

Hatchery programs are vital for effectuating treaty-reserved rights of tribes, as well as non-treaty recreational and commercial fisheries both within the Columbia River and along the West Coast. Columbia River Hatchery programs also play a critical role economically by contributing to U.S. fisheries in Alaska, Washington, and Oregon that provide 26,700 full time equivalent jobs and $3.4 billion in economic value annually.

The aging federal hatchery facilities in the Columbia River Basin need funding to maintain infrastructure and continue operations. For several decades, agency budgets and congressional appropriations have not provided sufficient funds to maintain and repair critical infrastructure such as pipelines, generators, pumps, filters, chillers, and rearing units that are in danger of failing – or in some cases have already failed – putting both fish, fisheries, and conservation efforts they support at risk. Emergency situations cannot be addressed in real-time, and critical capital projects cannot be pursued.

- Ensure that current hatchery O&M budgets are adequate to maintain mitigation goals and objectives.
- Fund and fully implement deferred repairs and operation and maintenance actions identified in the Treaty Tribes' "Billion Dollar Backlog".[19]

[18] CRITFC maintains a comprehensive list of existing and new actions titled "Avian Management Current Conditions/Future Potential Actions" for avian species of concern. This spreadsheet is readily available.

[19] Columbia River Inter-Tribal Fish Commission, *Overview of Columbia River USACE Fish Budget Needs* (2022), available at https://critfc.org/wp-content/uploads/2022/09/CRITFC-USACE-Fish-Budget_2022.pdf. Summary of Columbia Basin Federal Hatcheries Infrastructure Needs – Deferred Maintenance and Capital Fixes (2021) (originally prepared by the *US v. Oregon* Production Advisory Committee, and subsequently advanced by the NPCC to various congressional members in 2021 – *see e.g.* July 13, 2021 Letter from NPCC to Sen. Mike Crapo).

- Empower and fund the tribal and state fisheries co-managers to work with appropriate federal agencies to finalize and implement a strategy to continually fund hatchery maintenance and operation and modernization needs into the future. One potential concept that utilizes a more transparent process is to create a Capital Assets Replacement Fund (CARF). An annual fixed amount of funds would go into the CARF, providing some funding stability. The amounts could be reviewed on a periodic basis, and the operating agencies would decide how to spend the CARF potentially via the *U.S. v. Oregon* Management Agreement's Production Advisory Committee or an analogous group making recommendations to policy makers. To support long-term climate resilience, develop and fund emergency hatchery programs that may be necessary to reduce extinction risk of highly vulnerable populations if environmental conditions deteriorate (e.g., drought, reduced snowpack, poor ocean conditions).

Harvest

Harvest is at severely depressed levels relative to Treaty rights and healthy and abundant fisheries and reflects significant reductions in tribal and non-tribal fisheries compared to pre-CRS development. Harvest management has embraced responsiveness to the needs of the fish (e.g., through an abundance-based management approach) in contrast to other sources of mortality. As such, harvest is the only impact sector that is inherently responsive to the real-time conservation needs of the fish.

- Support Existing Harvest Forums: The *US v. Oregon* Management Agreement adopted by the Parties to *United States v. Oregon*, Civil No. 68-513-MO (D. Or.) provides an effective framework for managing treaty Indian and non-treaty fisheries, harvest, and hatchery production consistent with federal ESA requirements and the Parties exercising their sovereign powers in a coordinated and systematic manner to protect, rebuild, and enhance interior Columbia River Basin fish runs.
- Sampling Infrastructure Improvements: The Bonneville Dam Adult Fish Facility (AFF) is used for stock monitoring and research. Data collected there is used for several stock forecasts and some data, especially for steelhead are directly used in harvest management. Like much of the Columbia River hydro- and hatchery systems, the AFF is sorely in need of deferred maintenance and modernization without which ensuring robust, random sample rates is becoming increasingly challenging. Modernizing the sampling facility on the Washington shore fish ladder and adding a new facility on the Oregon shore fish ladder would improve sampling and produce better quality data.
- Expand Funding for Technical Collaboration in Co-Management Forums: The tribes and states participate in the technical and production advisory committees established in the *U.S. v Oregon* Management Agreement. These committees are regularly tasked with complex analyses of issues affecting these parties' efforts to co-manage fisheries and hatchery production in ways to support salmon recovery efforts, and to ensure fisheries comply with ESA and other management limits. Completion of these tasks is often hampered by lack of funding for staff time, and additional capacity would help execute the analyses. Increased funding to support these efforts would provide important benefits to all these entities, their co-management agreements, and their commitments in the *U.S. v. Oregon* Management Agreement.

Ocean Conditions and Climate Change

The impacts of ocean conditions and climate change on Columbia Basin fisheries exacerbate, but do not excuse or obviate (and in fact accentuate) federal obligations to address, the historic and continuing impacts of the hydrosystem on salmon, steelhead, and other native fish.

Fisheries restoration, including associated habitat actions, is deeply interconnected with enhanced Columbia Basin climate resilience. Regional clean energy, decarbonization, and climate resilient infrastructure needs can and should be met in ways that support the health of Columbia Basin fisheries and the tribal and non-tribal communities that depend upon them.

- Develop stock specific ocean indicators (red light/green light charts) for forecasting salmon and steelhead returns using a mechanistic ecosystem approach. Use multiple perspectives to identify the most important ecological drivers of salmon survival in climate change scenarios in order to direct actions for the greatest benefit.
- Reduce carryover effects for salmon entering the ocean. Increase tributary and mainstem riparian and floodplain restoration actions to improve smolt body size and run timing which reduces carryover effects going into the ocean. Increased spill at mainstem dams and restoring migration corridors reduce carryover effects and provides higher survival in the ocean environment.
- Increase funding for Columbia River estuary restoration. Estuary restoration improves salmon prey availability and reduces predation by providing alternative food sources (increased abundance of other prey such as anchovy).
- Fund and implement Fishery Management Plans for coastal pelagic species. Increasing forage fish can provide an alternate prey for salmon predators which increases salmon survival.
- Focus management on improving overall food webs.

Other Native Fish Species

The proposed CBRI should fund and implement recovery programs for culturally and ecologically important native species regardless of ESA listing status, including:

Considering the significant and dramatic reduction in adult lamprey numbers in the interior Columbia River Basin watersheds, and the existing passage problems and other threats that may take decades to resolve, natural recolonization and restoration will not be enough to halt the decline of Pacific lamprey in the interior basin. The likely relationship of adult lamprey attraction to larval lamprey pheromones supports the use of multiple management strategies including translocation, propagation, reintroduction, and supplementation/augmentation for short and long-term preservation of this species in the Columbia basin.

White sturgeon occur throughout most of their historical range in the Columbia and Snake Rivers, but current production is far below the historical level in part due to the hydropower system. Low numbers severely limit sturgeon harvest opportunities throughout the basin, particularly for impounded populations upstream from Bonneville Dam. Due to past budget cuts and funding that has not kept pace with inflation, the scope of the work being done and our ability to monitor these populations has been dramatically reduced. For example, translocation mitigation efforts, and research monitoring and evaluation efforts aimed at better understanding maturation rates, spawning periodicity and the sex

composition of the adult population are no longer conducted (nor are any stock assessments or reproduction checks upstream of McNary Dam and in the Snake River downstream of Hells Canyon Dam).

Construction and operation of the hydropower system, dams and diversions in the tributary habitats, and out-of-stream diversions in tributaries has fragmented endangered bull trout habitat, impacting adfluvial life histories (from lakes and/or tributaries to Columbia River mainstem and back), diminishing and isolating populations and preventing genetic exchange and diversity.

For freshwater mussels, the hydropower system, dams and diversions in tributary habitats, out-of-stream diversions in tributaries, decreases in tributary water quality (temperature, contaminants), loss of floodplain/riverine habitats, and reductions in native host fish populations, have resulted in greatly diminished and isolated populations of freshwater mussels and threatens their genetic diversity and viability. The Confederated Tribes of the Umatilla Indian Reservation have developed the "Master Plan: Freshwater Mussel Conservation, Supplementation, Aquaculture, Restoration, and Research (2021)" which contains four phases, related to artificial propagation research, population supplementation and biological research, restoration strategy development, and implementation.

Construction and operation of the hydropower system, dams and diversions in tributary habitats, out-of-stream diversions in tributaries, loss of floodplain and riverine habitats, consequent decreases in tributary water quality, and expansions of non-native, competing fish species, have reduced habitat quality and availability for a wide variety of resident fish species including, rainbow and redband trout, mountain whitefish, and suckers, leading to reduced abundance. Resident fish are an important dietary and cultural component for Tribal communities and provide important value when anadromous fish returns are absent or diminished, as is commonly the case with reduced salmon populations and climate-driven marine conditions that can dramatically reduce anadromous fish productivity.

Adaptive Management

- Develop a science-based decision support structure as the region moves forward with planning and implementation, ensuring climate resiliency, along with the objectives stated earlier, is considered throughout.
- Leverage relationships with PNW Universities and co-managers to develop and answer relevant research questions, advance our understanding of PNW fisheries ecology and responsive restoration actions.
- Leverage relationships with PNW Universities and co-managers to develop the next generation of scientists, managers, and engineers to continue our long-term efforts in the restoration of the fisheries, freshwater habitats, the marine environment, climate adaptation, and energy and transportation modernizations.
- Establish a long-term biological performance monitoring and reporting program based on goals and objectives identified above to measure progress and improvements towards the long-term goals identified in the CRB Task Force Phase II Report.

Additional Details for CRS Operations:

Although CRS operations alone cannot reverse declines nor rebuild imperiled Columbia Basin salmon and steelhead stocks, they are essential elements of a comprehensive strategy to help address the

urgent conservation necessity in the near term and to complement rebuilding efforts in the long term. As such, CRS operations are a key component of the proposed CBRI.

As stated in the USG commitments (*NWF v NMFS*; Dkt. 2423-2), "The Administration commits to examining all current funding opportunities in 2023 and seeking additional funding for new power and transmission resources to offset future changes to the CRS as well as other emerging energy needs. **The Administration understands that 'future changes to the CRS' contemplates a broad set of future changes related to spills and other operational changes in addition to potentially breaching the four lower Snake River dams."** And, **"The Administration further commits to exploring with the Plaintiffs and other sovereigns post 2023 operations as part of a long-term comprehensive solution."** (Emphasis added).

As stated above, CRS operations can help minimize additional generational decline of fish populations and reduce extinction risk, and help complement achievement of healthy and abundant salmon and steelhead returns[20] throughout the Columbia River Basin. Generally, this will require sustained freshwater productivity of at least 100 smolts per female and smolt-to-adult return rates (SARs) of 2-6%, averaging 4%. As the United States' Commitments acknowledge, "In the face of climate change, urgent action is needed to restore salmon and other native fish populations to healthy and abundant levels; achievement of these goals must be timely and done in a way that benefits ecosystem function for all native anadromous and resident fish species." National Oceanic and Atmospheric Administration (NOAA) described[21] a suite of actions, including breaching of the four Lower Snake River dams and reintroduction into blocked areas, that are necessary to achieve these productivity and survival rates. CRS operations can help improve SARs by minimizing both powerhouse encounter rates (PITPH) and fish travel times to help minimize additional generational decline of fish populations and reduce extinction risk in the interim, which will also complement broader rebuilding efforts in the long term, including implementation of NOAA's centerpiece actions.

As such, CRS operations are best identified in the context of pre- and post-LSR restoration via dam breaching. Table 1 provides specific details for CRS operations in that context. Operations consist of four categories of actions: spill, reservoir elevations, system operations requests, and other categories (maintenance and infrastructure). The spill and reservoir operations are identified in the Columbia River Inter-Tribal Fish Commission (CRITFC) Energy Vision for the Columbia Basin;[22] the information below provides details as to the implementation of these operations.[23] System Operations Requests are derived from technical team requests, 2023 operations requests,[24] or lessons learned in the

[20] NMFS (National Marine Fisheries Service). 2020. A vision for salmon and steelhead: goals to restore thriving salmon and steelhead to the Columbia River basin. Phase 2 report of the Columbia River Partnership Task Force of the Marine Fisheries Advisory Committee. Portland, OR. https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/MAFAC_CRB_Phase2ReportFinal_508.pdf?null.

[21] NOAA (National Oceanic and Atmospheric Administration). 2022. Rebuilding Interior Columbia Basin Salmon and Steelhead. https://repository.library.noaa.gov/view/noaa/46461/noaa_46461_DS1.pdf.

[22] Columbia River Inter-Tribal Fish Commission. 2022. Energy Vision for the Columbia River Basin, at 142-146. https://critfc.org/wp-content/uploads/2022/09/CRITFC-Energy-Vision-Full-Report.pdf

[23] These operations should not be understood to describe nor limit any relief the PI Plaintiffs or any party may seek through litigation.

[24] PI Plaintiff Recommendations for CRS Operational Adjustments for Spring and Summer 2023 (April 3 – August 31).

hydrosystem forums. Maintenance needs are identified in the CRITFC/Corps Infrastructure Needs document and in the 2023 operations requests.

See Table 1, below, for interim and long-term operational strategies for the four lower Columbia and four lower Snake River dams to help minimize additional generational declines and complement timely achievement of healthy and abundant fish returns.

Table 1 – Interim & Long-Term Operational Strategies

Operation Category	Interim Operations (*italics* indicates change from 2023 stay-based operation)	Long-term Operations (Upon implementation of LSR restoration via 4-dam breach) (italics indicates change from interim operation)
Spill[25]	**Spring Spill:** **LGR:** *125% Gas Cap 24/7 (i.e. No PS flex operation). Adaptive management operation(s) (e.g. 40% flex spill, etc.) if adult delays observed*. **LGO:** *125% Gas Cap 24/7, until adult salmonid abundance criteria are satisfied*, then 125% TDG and 30% Performance Standard flex. *Explore alternatives (with emphasis on reasonable structural modifications over spill reductions) to address adult passage delays*. **LOMO:** *125% Gas Cap 24/7 (i.e. No PS flex operation). Adaptive management operation(s) (e.g. 40% flex spill, etc.) if adult delays observed.* **ICH:** No change (125% Gas Cap 24/7), with potential to revise adaptive management operations. **MCN:** No change (125% Gas Cap 24/7).*Conduct ERDC modeling of alternative spill patterns*[26] *Secure some LSR replacement generation by increasing Minimum Generation volume to 60kcfs (currently at 55kcfs)*[27]. **JDA:** *125% Gas Cap 24/7. No PS flex operation. Secure some LSR replacement by increasing Minimum Generation volume to 65kcfs*	**Spring Spill:** **LGR:** *NA* **LGO:** *NA* **LOMO:** *NA* **ICH:** *NA* **MCN:** No change (125% Gas Cap 24/7).

[25] EPA/Ecology/DEQ will collaborate to clarify TDG and GBT monitoring requirements and responses, particularly with respect to non-salmonids.

[26] April 28, 2023 Joint State, Federal and Tribal Fishery Agencies Technical Memorandum to USCOE regarding McNary Spillway Hoists and Modified Spill Patterns https://www.fpc.org/documents/joint_technical/JTSM_01_2023.pdf .

[27] Provide for increased generation to achieve replacement of LSR min gen (~320MW); adjust the midpoint for minimum generation flow target (2023 FOP).

	(currently at 55kcfs). Highlight/formalize ability for short term/duration spill reductions to maintain reliability. Consider ways to improve INC/DEC coverage to maintain reliability, without impacting fish-based operations. **TDA:** No change (40% with allowance to meet without exceeding 125%). *Secure some LSR replacement by increasing Minimum Generation volume to 75kcfs (currently at 55kcfs). Consider ways to improve INC/DEC coverage to maintain reliability, without impacting fish-based operations*. **BON:** No change (150kcfs spill at BON for stilling basin erosion precaution). *Secure some LSR replacement by increasing Minimum Generation volume to 55kcfs (currently at 35kcfs). Eliminate rock entrainment and associated erosion risk to allow restoration of 125% gas cap spill*. **<u>Summer Spill (June 21/16 – August 14)</u>**: **LGR:** No change (18kcfs spill). **LGO:** No change (30% spill). **LOMO:** No change (17kcfs). **ICH:** No change (30% spill). **MCN:** No change (57% spill). **JDA:** No change (35% spill). **TDA:** No change (40% spill).	**JDA:** No change from Interim (125% Gas Cap 24/7, with Adaptive management operation to keep TDA TDG from exceeding 125%)**.** Highlight/formalize ability for short term/duration spill reductions to maintain reliability. *Consider skeleton bay use*[29]. **TDA:** No change (40% with allowance to meet without exceeding 125%). **BON:** *24/7 125% gas cap spill*. **<u>Summer Spill (June 21/16 – August 14):</u>** **LGR:** *NA* **LGO:** *NA* **LOMO:** *NA* **ICH:** *NA* **MCN:** No change (57% spill). No change from interim. Maintain uniform spill pattern and do not implement rotating spill bay operation after spill bay maintenance is completed.

[29] This is the only LCR dam that left the powerhouse vacant of generator units (4 empty or 'skeleton' bays). Currently the use of spill is countered by tail water eddy formation where no flow is available (transition between powerhouse and spillway). This potentially could be used to emphasize replacement/innovation potential creating a better adaptive turbine design that functions using less water delivered at the surface that can also serve as surface passage in hopes of eliminating fish interaction with the powerhouse route. It could also establish RM&E improvement that will likely be needed when the four Lower Snake River dams are breached.

	BON: No change (95kcfs spill). **<u>Summer Spill (August 15 -31):</u>** **LGR:** *Maintain 18kcfs spill through August 31.* **LGO:** *Maintain 30% spill through August 31*. **LOMO:** *Maintain 17kcfs spill through August 31.* **ICH:** *Maintain 30% spill through August 31.* **MCN:** Maintain 57% spill through August 31. **JDA:** Maintain 35% spill through August 31. **TDA:** No change from previous BiOps and Flex Spill Agreement (40% spill). **BON:** No change from Flex Spill Agreement (95kcfs spill). **<u>Fall-winter spill</u>**: **LGR:** *September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: RSW spill 24/7*. **LGO:** *September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: ASW spill 24/7*. **LOMO:** *September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: TSW spill 24/7*. **ICH:** *September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: TSW spill 24/7*.	**JDA:** No change (35% spill). **TDA:** No change (40% spill). **BON:** No change (95kcfs spill). **<u>Summer Spill (August 15 -31):</u>** **LGR:** *NA* **LGO:** *NA* **LOMO:** *NA* **ICH:** *NA* **MCN:** No change from Flex Spill Agreement (2 RSWs ~20kcfs spill). **JDA:** No change from Flex Spill Agreement (2 RSWs ~20 kcfs spill). **TDA:** No change from Flex Spill Agreement (30% spill). **BON:** No change from Flex Spill Agreement (55kcfs spill, including 5k corner collector). **<u>Fall-winter spill</u>**: **LGR:** *NA* **LGO:** *NA* **LOMO:** *NA* **ICH:** *NA*

	MCN: *September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: 2 TSW ~ 20kcfs spill*[28]. **JDA:** *September 1 - March 30, with accommodation for freezing temperatures and routine maintenance: 2 TSW ~ 20kcfs spill*. Maintain adult ladder attraction spill. **TDA***: Ice and trash sluiceway (~5 kcfs 24/7); full year operation*. Maintain adult ladder attraction spill. **BON:** *Corner collector operation full year, regular operation*. Maintain adult ladder attraction spill.	**MCN:** No Change from Interim, with accommodation for freezing temperatures and routine maintenance: 2 TSW ~ 20kcfs spill.) **JDA:** No Change from Interim, with accommodation for freezing temperatures and routine maintenance: 2 TSW ~ 20kcfs spill, with maintained adult ladder attraction spill). **TDA:** No change from Interim (Ice and trash sluiceway ~5 kcfs 24/7; full year operation, with maintained adult ladder attraction spill). **BON:** No Change from Interim (Corner Collector operation full year, regular operation, with maintained adult ladder attraction spill).
Reservoir Elevations	**Lower Snake Projects:** *Manage for MOP*[30] *operations March through September with 1.0 foot hard operating range and target 0.5 foot soft constraint*. **LGR:** *Maintain LGR MOP operations through end of Dworshak Dam Snake River Basin Adjudication (SRBA) Agreement flow augmentation (mid to late September)*. Dredging: Implement Programmatic Sediment Management Plan. Dredge LSR in 2022/23*, with no additional dredging until at least 2028 (5 years). Preemptively dredge to remove/reduce sediment load subject to erosion when dams are breached*. **Lower Columbia Projects:** *Manage for MOP operations March through September with a 1.5 foot hard, and 1.0 foot soft operating range*[31].	**Lower Snake Projects:** *NA* **Lower Columbia Projects:** No change from 2024 (Manage for MOP operations March through September with a 1.5 foot hard, and 1.0 foot soft operating range).

[28] Establish variable flow table for lower Columbia surface passage routes linked to 0.5 foot pool elevation intervals (see Snake table).
[30] Minimum pool elevation; LWG 733 ft; LGS 633 ft.; LMN 537 ft.; IHR 437 ft.
[31] Secure USFWS authority to actively manage avian nesting in John Day pool.

	JDA: *Prior to initiating MOP at the JDA project, conduct JDA minimum pool study to explore alternatives that minimize water storage and pool elevation requirements when establishing regional power reliability constraints/demands, navigation, and municipal and irrigation water supplies (e.g., eliminate maximum short duration as reliability standard, target, or baseline operation). Ensure continuity of services for water supply and irrigation (e.g.; Extension of irrigation intakes)*.	
System Operations Requests	**Regional Forum**: *Base regional forum deliberations on achievement of CBP mid-range goals by 2050; prioritize fish* operations relative to other authorized purposes when *making in-season adaptive management decisions; and require timely response with memo*. **Dworshak Ramp Rates**: No change from 2021 Stay. **Zero Generation at LSR:** *Prohibit zero flow (generation) operations at LSR projects during January and February (zero generation during other months an alternative when 24/7 spill is occurring that maintains flow)*. **Juvenile transportation program**: Maintain ability to adaptively adjust transportation for best benefits, under extreme environmental conditions, and/or conservation programs (i.e. Tucannon spring Chinook), *embracing general premise of optimizing in-river conditions via spill and other measures and not eroding in-river conditions in order to collect juveniles*.	**Regional Forum**: No change from 2023 (Base regional forum deliberations on achievement of CBP mid-range goals by 2050; prioritize fish operations relative to other authorized purposes when making in-season adaptive management decisions; and require timely response with memo). **Dworshak Ramp Rates:** *Enable short-term increases in generation to maintain reliability and meet LSR replacement, in addition to exploring development of other low-carbon LSR replacement power production*. **Zero Generation at LSR:** *NA*
Other Categories	**Maintenance:** *Fund MCN adult ladder repair and maintenance. Fund MCN juvenile bypass system and brush repair and maintenance*.	

	Establish urgency and timeline, with secured funding, for modifying BON, TDA, JDA, and MCN projects for functional adult lamprey passage. *Fund spillway repair and maintenance at LOMO, ICH, MCN, JDA, TDA.* *Repair spillway cranes and spill gates to full functionality at all projects*. *Evaluate necessity of powerhouse rehab/replacement at lower Snake projects given pending breach action.* *Minimize degraded fish operations resulting from scheduled and unscheduled maintenance/outages.* *Secure full funding for CRITFC infrastructure package. Emphasis on long-term functionality of mainstem projects and interim period functionality at Snake River projects.* **Monitoring Infrastructure Adjustments:** *Design new PIT monitoring infrastructure for operation in breached Lower Snake River and expand PIT monitoring infrastructure (e.g. estuary trawl, BON surface detection, and MCN spillway detector)*. **LOMO, ICH, MCN:** Conduct ERDC modeling of alternative spill patterns to address adult delay under extreme (low or high) flow conditions.	

Additional Details for Securing Continuity of Services Prior to LSR Dam Breaching:

Breaching the four Lower Snake River dams will require replacement for the services of the dams, or mitigation of those that cannot be replaced, before they are breached. Key areas identified in the Lower Snake River Dams (LSRD): Benefit Replacement Report (Replacement Report) prepared for the Inslee-Murray "Joint Federal State Process" that must be addressed include energy, navigation/transportation, irrigation, and recreation. The Replacement Report found that "the services provided by the LSRD could be replaced, or even improved upon, and where they cannot be replaced or improved, mitigation and compensation could be provided." The Replacement Report examined the full literature available on the cost of replacing the services of the LSRD and provides a range for the likely cost of those investments. In its 2023 legislative session, Washington enacted legislation that will expand on past work on replacing the energy, transportation, and irrigation services provided by the LSRD, and the work recommended below should be done in close coordination with Washington and other sovereigns.

- Energy replacement: Investment in a clean energy portfolio that would rely primarily on solar and wind generation, energy storage, energy efficiency, and demand response. Will require developing and refining a plan outlining specific steps necessary to replace the dams' average energy output as well as peaking capacity, protect grid resiliency and transmission services, and protect ratepayers by maintaining affordable rates. Will require identifying a lead agency to determine the replacement energy portfolio in light of advancing technology and conduct the regulatory and funding actions necessary to deploy it.
- Navigation and Transportation: Navigation and transportation actions identified by the Replacement Report include upgrading rail infrastructure, upgrading grain storage and loading facilities, improving state and local roadways, ensuring shipping costs remain competitive, compensating for economic losses, and addressing/minimizing transportation emissions. As with energy replacement, identifying a lead agency or agencies to develop a detailed plan to fund and implement will be necessary.
- Irrigated Agriculture: Approximately 50,000 acres of farmland are irrigated by the reservoir and water table created by Ice Harbor Dam. Actions identified by the Replacement Report include deepening wells, modifications to pumping infrastructure, and surface water withdrawal modification. As with the other replacement services, a lead agency would need to be identified to work with irrigation agriculture entities (including municipal water and wastewater services) to conduct detailed analysis, funding, and implementation of a plan to ensure continuity of access to water supplies.
- Recreation: Breaching the Lower Snake River dams would alter recreation on the Lower Snake River from flat-water reservoir recreation to free-flowing river recreation. To assist with this transition, the Simpson Initiative suggested providing federal funding for recreation management, tourism promotion, a sportfishing contingency fund during the restoration process, relocation and/or compensation for existing marinas, and compensation for owners of motorboats designed for use on lakes and reservoirs. An agency or agencies should also be assigned to lead refinement, funding, and implementation of a recreation-management and mitigation plan.
- Economic Development: The Simpson Initiative suggests investing in Lewiston-Clarkston waterfront restoration as part of the breaching process, as well as general economic development funds for the Lewiston-Clarkston and Tri-Cities areas. This is another area that

would benefit from a lead role by an agency or agencies to consult with local communities and create a plan to be funded and implemented.