

Northwest Power and Conservation Council Columbia River Basin Fish and Wildlife Program

STAFF DRAFT Findings on Recommendations and Responses to Comments for the 2020 Addendum to the 2014 Fish and Wildlife Program

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In this part of its Fish and Wildlife Program, the Northwest Power and Conservation Council (Council) explains its disposition of the recommendations it received to begin this program amendment process and how it used those recommendations to develop the **draft** 2020 Addendum to the 2014 Fish and Wildlife Program in a manner consistent with the requirements of Section 4(h) of the Northwest Power Act. This document includes the written explanations, as part of the program itself, that explain the “basis for [the Council’s] finding” not to adopt certain recommendations, consistent with the requirements of Section 4(h)(7) of the Act (often referred to as “the findings”). Beyond the required findings explaining any rejection of recommendations, this document also includes an explanation for how the Council incorporated or addressed the substance of recommendations in the draft program amendments. This document also provides a response to the comments that the Council received on the recommendations, to the extent the comments included substance additional to the recommendations.¹

Introduction and program amendment process

Following the requirements of Section 4(h) of the Northwest Power Act, the Council began the amendment process in May 2018 by requesting in writing that state and federal fish and wildlife agencies, the region’s Indian tribes, and other interested parties

¹ The Council’s written explanation as to how it handled program amendment recommendations (the “findings” document) is not ordinarily subject to public review and comment, as the usual practice of the Council has been to prepare the findings document along with the final program amendments. This is an unusual amendment process in which the Council has tentatively concluded that developing an Addendum to the existing program makes more sense than wholesale amendments to the existing program. Under that premise, it also makes sense to let the recommending entities understand how the Council considered the recommendations in crafting the draft Addendum and why the Council concluded that a number of the recommendations are already reflected in the 2014 Program. That is the purpose of this draft explanation made available at the same time as the draft program Addendum. The findings document at this point is less formal than the final document will be that accompanies the final program amendments. Reviewing parties should focus their comments on the provisions of the draft program amendments in the Addendum, and not on this explanation, using this written explanation as guidance for why the draft amendments look as they do based on this body of recommendations.

submit written recommendations for amendments to the Council's 2014 Columbia River Basin Fish and Wildlife program. In the call for recommendations, the Council recognized the accomplishments of the program over the past 36 years; noted several regional developments that have been influenced by and may, in turn, influence the Council's program; and identified the opportunity presented during this amendment process to concentrate on specific program areas that would allow the program to progress in implementation. The Council received 51 recommendations by the December 13, 2018 deadline. The Council then sought and received public comment on the recommendations as required by Section 4(h)(4) of the Act.

The Council developed the draft 2020 Addendum to the 2014 Program based on these recommendations, the supporting documents that came with the recommendations, the comments offered on the recommendations, and other views and information obtained through public comment and discussions with state and federal fish and wildlife agencies, tribes, Bonneville, other federal agencies, Bonneville customers, and others. The choice to proceed by addendum needs further explanation:

From the release of the letter calling for recommendations in May 2018 until the release of the draft 2020 Addendum in July 2019, the Council or its four-member fish and wildlife committee had numerous discussions in public about the fish and wildlife program, the program amendment process, the content of the program amendment recommendations and comments on the recommendations, the program issues raised in the recommendations and comments, and proposed program amendments. In the Council's review of the recommendations and throughout these discussions it seemed to the Council that the recommendations and the comments on the recommendations raised relatively few issues of substance with the provisions of the 2014 Program, revisions in the program text that would mean a real change in program direction or implementation. Instead, the most substantive recommendations and comments focused especially on two topics. One set of recommendations raised issues about program implementation, either with regard to specific program strategies or with regard to methods by which the program is implemented and the appropriate roles of Bonneville, the Council, and the fish and wildlife agencies and tribes in implementation. A second large set of recommendations focused on the need to improve how the Council and others assess program performance, and the need to further develop and use program goals, objectives and performance indicators to that end.

Based on this review the Council tentatively concluded that a wholesale revision of the program was neither necessary nor the most appropriate way to respond to recommendations and comments of this nature. Hence, the development of the draft program Addendum instead.

The Council considers the draft 2020 Addendum, if and when finalized, to be part of the 2014 Program, as will be the final findings document. The text of the 2014 Program remains in effect. Nothing in the 2020 Addendum replaces or supersedes the provisions of the 2014 Program, although in some obvious situations the Addendum supplements or reorganizes material in the 2014 Program.

What follows is a discussion of the program amendment recommendations and how the recommendations and comments were used by the Council to craft the draft Addendum; how the Council concludes that many recommendations and comments are already addressed in the existing provisions of the 2014 Fish and Wildlife Program; and if recommendations were not adopted, an explanation of the basis for that decision consistent with Section (4)(h)(7) of the Act.

The discussion is organized to mirror the organization of the 2014 Program. The recommendations and comments are paraphrased and summarized. The summaries are *not* the recommendations, but are instead a useful device for allowing for responses in a discrete document. The recommendations and comments themselves can be found at <https://www.nwcouncil.org/fw/program/2018-amendments>. The Council's responses are in italics.

Program Overview and Introduction, including Program Framework

No recommending entity sought wholesale or substantial changes to the program's basic overview, structure and organizing framework. Many entities - Idaho Department of Fish and Game, Idaho Office of Species Conservation, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, Columbia River Inter-Tribal Fish Commission, Confederated Tribes of Colville Reservation, Confederated Salish & Kootenai Tribes, U.S. Fish and Wildlife Service, Bonneville - recommended the Council simply retain the 2014 Program without major revision or even any revision, and at most simply incorporate or recognize recent developments, most notably the extensions of the Columbia Basin Fish Accords. Others – including Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Montana Fish, Wildlife & Parks, Idaho Department of Fish and Game, Upper Columbia Salmon Recovery Board, Burns Paiute Tribe, Coeur d'Alene Tribe, Kalispel Tribe of Indians, Kootenai Tribe of Idaho, Yakama Nation, Nez Perce Tribe, Confederated Tribes of Grand Ronde, Shoshone-Bannock Tribes, Upper Snake River Tribes, NOAA Fisheries, U.S. Geological Survey, Sierra Club et al., American Rivers - similarly recommended that the 2014 Program should remain the base without substantial change in its text even as they recommended restructuring elements of the program to better allow for the adaptive management approach the program already called for in concept; or identified program implementation problems and to identify priority actions for the near future; or both.

Recommendations relating to the program's geographic structure largely focused on implementation matters, not the basic structure. A number of recommendations highlighted certain areas for enhanced focus and a greater implementation commitment to mitigate for the impacts of the hydropower system, such as the Lower Columbia, estuary, plume, and ocean (Lower Columbia Fish Recovery Board, Lower Columbia Estuary Partnership); the upper Columbia including the blocked areas (Spokane Tribe of Indians, Coeur d'Alene Tribe, Kalispel Tribe of Indians, Upper Columbia Salmon Recovery Board); the Willamette River subbasin (Confederated Tribes of Grand Ronde); and the Snake River basin (Nez Perce Tribe, Burns Paiute Tribe, Upper Snake River Tribes). The Confederated Tribes of Grand Ronde did recommend including in the program a written description of the identification and structure of the Columbia Basin provinces and a description of the mainstem Columbia River with associated maps.

A number of recommendations spoke generally to the program's overarching direction and priorities: E.g., NOAA Fisheries and U.S. Fish and Wildlife Service recommended that the program prioritize implementation to benefit Endangered Species Act-listed populations. Several entities recommended the Council continue to

emphasize that the program is broader than the Endangered Species Act and should address all areas and species, whether or not there are long term funding commitments through Endangered Species Act decisions or through the Columbia Basin Accords (Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Nez Perce Tribe, Burns Paiute Tribe, Spokane Tribe of Indians, Sierra Club et al.). Bluefish.org recommended that the Council consider its ability through its public processes to oversee the various activities involved in salmon and steelhead recovery in the basin, a public oversight role not provided by the Regional Implementation Oversight Group set up by NOAA and others as part of the Endangered Species Act implementation structure.

Another set of recommendations emphasized that the program is far from fully implemented in terms of the activities needed to address hydrosystem impacts and that the focus of the implemented program needs to be on those areas that continue to be under-mitigated (Spokane Tribe of Indians, Kalispel Tribe of Indians, Coeur d'Alene Tribe, Burns Paiute Tribe, Confederated Tribes of Grand Ronde) Many of these entities asserted that program policies, such as traditional funding allocation policies, have resulted in under-mitigation for hydrosystem impacts. And another set of recommendations emphasized that the Council and the program should be clear that it can support only those activities directly related to addressing the impacts of the hydrosystem. The Council should demonstrate how the program's measures and objectives and implementation actions are properly limited in this way, and ensure that all fish and wildlife mitigation under the program has a direct hydrosystem nexus (Public Power Council et al, Snohomish PUD).

Regarding the program's discussion of its social and legal context, several recommendations called on the Council to recognize, emphasize or clarify the legal authority, roles, and obligations of the Council, Bonneville, and the fish and wildlife managers, particularly with regard to program implementation (Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Burns Paiute Tribe, Nez Perce Tribe, Spokane Tribe of Indians, Bonneville).

Regarding the discussion in the 2014 Program of program progress, successes and challenges, Bonneville recommended the program continue to recognize and update what the program has accomplished. This includes noting the extension of the Accord agreements in 2018, which should be highlighted and incorporated into the program. Other entities concurred with this last point - Confederated Tribes of the Colville Reservation, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, Yakama Nation, Columbia River Inter-Tribal Fish Commission. Other recommendations emphasized the continued

challenges that the program faces, seeking greater attention to threats such as climate change, non-native species, and aging infrastructure (Washington Department of Fish and Wildlife, Burns Paiute Tribe, Columbia River Inter-Tribal Fish Commission, Nez Perce Tribe, Yakama Nation).

Finally Bonneville and the Sierra Club et al. provided comments in the recommendations about how the Council should conduct the “AEERPS” analysis, that is, the aspect of the Northwest Power act that directs the Council to adopt the program to protect, mitigate and enhance fish and wildlife “while assuring the Pacific Northwest an adequate, efficient, economical and reliable power supply”.

Nothing in the recommendations prompted the Council to revise the Program Overview and Introduction or dive into amending the program as a whole. Preserving the text of the 2014 Program and handling in an Addendum the key program performance and specific implementation issues raised at this time is fundamentally consistent with the bulk of the recommendations received, especially from the state and federal fish and wildlife agencies and the region’s Indian tribes. The Council is comfortable that the Program Overview and Introduction - and the program’s general approach to protection and mitigation - appropriately reflect the requirements of the Northwest Power Act, including the need to protect, mitigate and enhance all fish and wildlife affected by the impacts of the Columbia hydrosystem, listed and unlisted, and that program implementation under the Act is to be limited to addressing the effects of hydrosystem effects, whether through direct protection measures or through off-site mitigation activities that can compensate for hydrosystem losses. In the Addendum the Council is updating the list of program accomplishments, while continuing to recognize the challenges that we all face in achieving success in program implementation. Draft 2020 Addendum, at 5-6, 35. Recommendations regarding areas of possible under-mitigation and funding allocation issues are addressed later in this document. The same is true for recommendations about roles and responsibilities in implementation. Finally, the Council appreciates and will consider the comments aimed at how the Council should consider the power system in the context of deciding on the fish and wildlife program measures (the AEERPS analysis). Note that at the same time, the Council considers these latter remarks to be comments and not the kind of program amendment “recommendations” called for under Section 4(h) of the Act for measures and objectives to protect, mitigate and enhance fish and wildlife. A discussion of the AEERPS analysis is included at the end of this document. Many of the recommendations regarding the program’s priorities and emphasis are discussed below, in the section of program implementation and priorities.

Program Vision and Scientific Foundation

As noted above, a number of entities recommended the Council retain the 2014 Program. Two recommending entities noted that the program’s Vision statement remains well suited to allow for equitably addressing impacts of the hydropower system across the basin (Confederated Tribes of Grand Ronde, Kalispel Tribe of Indians). *The Council retained the 2014 Program’s Vision statement and Scientific Foundation.*

Snohomish PUD recommended narrowing the Vision statement to focus the actions of the program on matters with a nexus with the hydroelectric system. *The program’s Vision statement already includes explicit reference to protection and mitigation that addresses the adverse effects of the development and operation of the hydrosystem. Even so, the Council continued to be mindful of this point as it developed the program performance and implementation provisions of the Addendum.*

Finally, Public Power Council et al recommended that the Council adopt the suggestions for modifying the program’s guiding scientific principles contained in the Independent Scientific Advisory Board’s 2018 review of the 2014 Program. “Doing so will clarify the program mission, enable greater flexibility, and ensure consistent application of best available science. Further, it maintains the program’s credibility as a science-based mitigation effort.” *The Council decided on this record not to revise the scientific principles in the 2014 Program. No other entity recommended any changes to the program’s Scientific Foundation. The Council already substantially modified the program’s expression of the guiding scientific principles in developing the 2014 Program, and did so at that time in direct response to the ISAB’s suggestions for modification in the ISAB’s review of the 2009 Fish and Wildlife Program. 2014 Program, 27-28, 226-27. The Council agrees that the program needs to maintain science-based credibility, and also that there is nothing particularly wrong with this newest set of suggested replacement scientific principles from the ISAB. On the other hand, the concepts expressed in the ISAB’s new suggested set of principles do not seem inconsistent with or markedly different from the concepts already expressed in the program’s scientific principles, and certain of the suggested refinements are already captured in other parts of the program (2014 Program text and/or Addendum), such as (for example) the suggested specific emphasis on declines in fish and wildlife populations that have occurred because critical habitats are blocked or reduced. The ISAB placed greater emphasis in its program review on the program’s goals, objectives and adaptive management approach – on how the Council should assess program performance and use that information in a scientifically credible way - and that is where the Council has put its emphasis in this amendment process. When the time comes for a wholesale revision of the program’s provisions, the Council will revisit this issue.*

Program Goals and Objectives

Adaptive Management

The Fish and Wildlife Program's Goals and Objectives are in Part Three (III) and Appendix D of the 2014 Program, while Part IV of the 2014 Program describes an Adaptive Management approach to assessing program performance against the program's goals and objectives. The recommendations submitted to the Council in this amendment process had a great deal to say about the program's goals and objectives, adaptive management, program performance, and the use of monitoring and evaluation information to make better planning and project decisions. Even so, few if any of these recommendations took issue with the substance of the provisions in 2014 Program, not fundamentally challenging either the program's goals or objectives nor its basic concepts of adaptive management. Instead, in various ways the recommendations emphasized that the Council and others could do more to assess program performance and use that information to make better decisions, and that reorganizing and further developing the program's goals and objectives and its approach to adaptive management is a necessary predicate. *The Council developed Part I of the draft 2020 Addendum to reflect these recommendations and related comments. The program's goals and objectives have been carried over, reorganized, and further developed where appropriate; performance indicators per program strategy have been added; and the Addendum explains in more detail how program performance will be assessed against these indicators and objectives.*

What follows then is a brief summary of the recommendations on this topic, broadly and generally considered. As a general matter the response to all of them is the same – the Council used these recommendations and related comments to craft Part I of the draft Program Addendum.

As a starting point, the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Nez Perce Tribe, and the Yakama Nation all submitted similar recommendations that the Council restructure the program's objectives and adaptive management section in the service of program performance and adaptive management. This included matters such as identifying and further developing the biological objectives and quantitative baselines against which to measure the rate and amount of progress made under the program; documenting gaps between program objectives and the status of fish and wildlife resources, quantifying how expected outcomes will assist in filling the gaps and reaching biological objectives; linking strategies and measures to performance measures and limiting factors and threats; identifying explicit annual reporting requirements related to program performance; and identifying the monitoring and data management needed to support performance

evaluation. One explanation for these recommendations: “It is very difficult to find a useful adaptive management logic path in the current document. Nowhere can you find (in one location) a goal with associated quantitative objectives, the strategy/measures to meet the objective(s), the monitoring required for the strategy/measures and the plan for reporting progress toward meeting the goal/objective(s).”

Significant recommendations with similar themes came from the Idaho Department of Fish and Game, the Idaho Office of Species Conservation, the Confederated Tribes of Grand Ronde, NOAA Fisheries, the U.S. Geological Survey, Trout Unlimited, Sierra Club et al., and the Freshwater Trust. Examples are recommendations to develop guidance for adaptive management of implementation projects and rigorous decisionmaking processes to inform broader regional strategies, further develop and address quantitative project objectives, develop coordinated monitoring and evaluation programs, and incorporate outcomes into decisionmaking cycles that include project and program participants, regional technical teams, and local stakeholders (Confederated Tribes of Grand Ronde, U.S. Geological Survey, Trout Unlimited). Sierra Club et al. recommended the Council identify and propose a full suite of appropriate quantitative biological objectives for the program, with a focus on adopting a set of objectives to measure progress at specific time-frames and ensure that progress towards them can and will be measured as part of the program in implementation. Trout Unlimited recommended a similar and extensive set of concepts, and also recommended that the Council implement the recommendations of the Independent Scientific Advisory Board (in its 2018 review of the Council’s Program) for the development of quantifiable objectives/metrics at multiple scales; objectives that are specific, measurable, articulable, relevant and time-bound; abundance goals based on productivity, biological capacity and density-dependent relationships for specific subbasins; and that certain traits essential to the resilience of salmon and steelhead should be captured with quantifiable metrics. So too did the Idaho Water Resources Board, recommending that the Council provide the programmatic guidance needed to implement adaptive management as recommended by the ISAB. Montana Fish, Wildlife and Parks recommended, as a general principle, that the program prioritize fish and wildlife mitigation investments that demonstrate measurable progress toward meeting the goals and objectives of the program and provide the highest biological effectiveness, with an element of cost-effective analysis incorporated into the setting of broader program priorities. Similarly, Freshwater Trust recommended that the Council develop quantitative metrics for use in prioritizing projects and spending limited restoration dollars efficiently. The Lower Columbia Fish Recovery Board recommended that the Council provide leadership and resources for coordinated basin-wide and local monitoring and adaptive management efforts. The Burns Paiute Tribe recommended the existing strategies be implemented and demonstrated through effectiveness

monitoring, before new objectives or strategies are introduced, given the current focus on program cost savings. Public Power Council et al. recommended the Council use this amendment process to improve the program's goals, clarify the measures of success, and prioritize goals and objectives that have a direct link to addressing the effects of the hydrosystem. Many entities included the explicit recommendation that the Council maintain the current program goals while expanding on and making better use of the program's objectives, including the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Nez Perce Tribe, Sierra Club et al., and the Legislative Council on River Governance.

More specifically, the Idaho Department of Fish and Game, Idaho Office of Species Conservation, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, the Nez Perce Tribe, Upper Snake River Tribes, NOAA Fisheries, Sierra Club et. al., and Trout Unlimited recommended the Council use the provisional quantitative goals for natural-origin salmon and steelhead populations developed by the NOAA Marine Fisheries Advisory Committee's Columbia Basin Partnership Task Force to help measure program progress, inform decisionmaking and take steps to refine program implementation. Idaho Department of Fish and Game, Idaho Office of Species Conservation and the Oregon Department of Fish and Wildlife each recommended the Council better define and inform the program's long-standing goal of increasing total adult salmon and steelhead runs to an average of 5 million annually by 2025. Idaho Department of Fish and Game and Idaho Office of Species Conservation recommended the Council evaluate progress toward meeting quantitative escapement goals for natural-origin salmon and steelhead that includes developing a basic understanding of the underlying factors affecting achievement of those goals, and recommended the program define objectives for hatchery-origin salmon and steelhead, and that existing mitigation or production goals should be identified and an effort made to determine what it would take to convert existing mitigation and production goals to an adult equivalent indicator for each hatchery program. The Lower Columbia Estuary Partnership and the Kalispel Tribe of Indians both recommended geographical objectives to ensure that mitigation work is distributed across the basin equitably with respect to impact. The Conservation Angler recommended the Council update its salmon and steelhead goal by partitioning its 5 million fish goal into one that includes hatchery and wild fish species so that the Council may evaluate progress. The Conservation Angler also recommended the Council adopt wild spawner escapement objectives for each subbasin plan and fund monitoring and evaluation research to determine effectiveness and needed improvements.

Turning to the related issue of monitoring, multiple recommendations supported collaborative efforts, such as the 2009 Anadromous Salmonid Monitoring Strategy, to

fully develop research, monitoring and evaluation programs. The Idaho Department of Fish and Game recommended that the differences between research, action and effectiveness monitoring, and status and trend monitoring be better defined and the means for tracking these different types of evaluations by Bonneville and the Council be better defined. Recommendations for continued support for research, monitoring and evaluation activities were received from the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Idaho Office of Species Conservation, Idaho Water Resources Board, Lower Columbia Fish Recovery Board, Upper Columbia Salmon Recovery Board, Yakama Nation, Nez Perce Tribe, Confederated Tribes of Grand Ronde, U.S. Geological Survey, Trout Unlimited, and American Rivers. Multiple entities recommended the Council provide an explicit monitoring and evaluation framework that identifies what measures and information will be reported on a regular basis to inform decisionmaking and to evaluate program performance (Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Idaho Office of Species Conservation, Yakama Nation, Confederated Tribes of Umatilla Indian Reservation, Nez Perce Tribe, Confederated Tribes of Grand Ronde, NOAA Fishers, U.S. Geological Survey, Bonneville and Trout Unlimited). The Upper Columbia Salmon Recovery Board also recommended a number of measures addressing monitoring and evaluation including: develop well-coordinated monitoring and evaluation plans and strategies with Bonneville and NOAA Fisheries, and work with regional technical partners to define measures for specific types of projects that can be analyzed and reported in a consistent manner at appropriate scales. Finally, Bonneville noted that the research, monitoring and evaluation portion of the program would benefit from an economic analysis to determine if and where research, monitoring and evaluation funding fails to yield a sufficient return-on-investment.

In addition to the more general support for collaborative efforts to conduct monitoring and evaluation, a number of recommendations identified specific monitoring needs. The Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, Washington Department of Fish and wildlife, Idaho Office of Species Conservation, Yakama Nation, Confederated Tribes of Umatilla Indian Reservation, Nez Perce Tribe, Confederated Tribes of Grand Ronde, and NOAA Fisheries recommended funding for habitat status and trend monitoring for priority subbasins, with the Idaho Department of Fish and Game noting the need for routine status and trend monitoring, which provides baseline data on abundance, productivity and survival, to be more directly in the program. The U.S. Geological Survey recommended that consistent, repeatable, monitoring of “fish in fish out” be achieved through a commitment of support, coordination, and continuous education. The U.S. Geological Survey also recommended that we develop a better understanding of the relationship between

physical and biological factors so that we may improve and inform deployment of new restoration efforts in the most effective way.

Finally, numerous entities discussed specific data management needs and data management infrastructure. The Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, Idaho Office of Species Conservation, Yakama Nation, Nez Perce Tribe, Columbia River Inter-Tribal Fish Commission, and NOAA Fisheries recommended that the role of programmatic projects that support the adaptive management portion of the program be understood to include the Fish Passage Center, Comparative Smolt Survival Study, Smolt Monitoring Program, StreamNet, StreamNet Library, Inter-Tribal Monitoring Data Project, Pacific Northwest Aquatic Monitoring Partnership, along with others to be identified as needed. Further, a number of entities recommended the Council adopt and Bonneville fund full implementation of the Coordinated Assessments Data Exchange, and establish the Coordinated Assessments Data Exchange as the database of record for the program. A subset of these entities also recommended that Bonneville, in partnership with the Council and the region, ensure that summarized data associated with broad categories of information are identified and accessible from a single, centralized website, and links to all the data collected in the program on fish abundance in a publicly-available website (Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Idaho Office of Species Conservation, Yakama Nation, Nez Perce Tribe and NOAA Fisheries). A number of recommendations also called for Bonneville to support and ensure that managers have the capacity to collect data, and maintain a reliable, sustainable and transparent data exchange for salmon and steelhead data (Idaho Department of Fish and Game, Idaho Office of Species Conservation, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Yakama Nation, Nez Perce Tribe and NOAA Fisheries). The Spokane Tribe of Indians recommended that the Upper Columbia Ecoregion requires a robust, well-funded monitoring and evaluation program to ensure that long-term anadromous, resident fish and wildlife projects achieved the established biological benchmarks over time. Bonneville recommended that a threshold data management issue should be to ensure that research funding is yielding accessible data. Finally, many entities recommended retaining the reporting measures that are currently in the program, which include (but not limited to): continue to develop and implement a concise, useful template for annual reports for research and monitoring projects; provide clear direction on how to identify projects and types of research, monitoring and evaluation; require all research, monitoring and evaluation projects, including hatchery programs, to report annually, providing an electronic summary of their results and interim findings, as well as the benefits to fish and wildlife.

No other topic got close to as much attention in the recommendations as the broad subject of adaptive management, combining the topics of program goals and objectives, strategies linked to objectives, monitoring and evaluation and project and program implementation, data management, program and project performance assessments and reporting, and then adapting how we manage and implement the program based on what is being learned. And again, these recommendations did not take issue with the content of the 2014 Program as much as describe the need to reorganize and to some extent supplement or broaden that content and then be more clear about how the parts are linked, performance is assessed, and decisionmaking is improved. That is the purpose of Part I of the draft Addendum on Program Performance and Adaptive Management. Goals and objectives have been reorganized, simplified, clarified, and in some cases elaborated on where necessary. Performance indicators have been added that deliberately link program strategies and the program's goals and objectives. The performance indicators can be refined over time outside the program amendment process to be of maximum utility, and the Council will work with the fish and wildlife agencies and tribes and others to that end. Draft 2020 Addendum, at 7-32.

Part I then describes briefly how the Council will use these elements for assessing program performance in a cost-effective manner. The Council intends to track and regularly report progress on the indicators, objectives and program goals; identify any information or analytical gaps that limit the ability to assess the performance of program strategies and the data and information needed to close those gaps; analyze and use the performance information to improve how the Council makes decisions, and make that information available to other program participants – especially Bonneville and the fish and wildlife agencies and tribes – for the same purpose. Finally, Part I identifies just as briefly the critical monitoring, information gathering, and data management activities needed to support the assessment of program performance as envisioned. These are described here as activities, not particular projects, to allow for any needed flexibility in how these activities are implemented. This section also has an emphasis on making sure there is broad public access to the information used to assess program performance. Id., at 7-8, 33-34.

More generally, the Council commits in the Addendum to the work needed to further develop a coordinated basinwide approach to research, monitoring, and evaluation that demonstrates the effectiveness of actions at multiple scales, working with Bonneville, NOAA Fisheries, and the other federal and state and tribal fish and wildlife entities to develop the Columbia River Basin Research and Monitoring Framework that includes specific guidance for habitat, hydrosystem operations, artificial propagation activities and other components of the program. The point is to use a coordinated approach to RM&E that is built upon previous basinwide efforts as well as current regional

approaches, a framework flexible enough to accommodate the biological and ecological variation across the basin and yet deliver useful information on program performance. Id., at 33-34.

Not all of the matters raised in the recommendations can be addressed and resolved in the Addendum. Some aspects will depend upon and be reshaped by implementation, that is, by how effectively the Council and others use the program elements developed in the Addendum to track and report on program performance over the next few years. That said, the Council considers Part I of the Addendum to be a good faith effort to be responsive to all the recommendations received on this topic.

Regarding the valid concerns expressed by Bonneville and Public Power Council et al that the Council limit the program to address the adverse effects of the hydrosystem on fish and wildlife and not assume responsibility for addressing goals and objectives based on all sources or mortality: The Council has been careful to express all program goals in terms of addressing the adverse effects of the development and operation of the Columbia hydropower facilities. When hydrosystem impacts have been quantitatively assessed, such as with the anadromous salmon and steelhead or construction and inundation wildlife losses, the program goals are explicitly described in terms of those losses. Where hydrosystem losses have not been quantitatively assessed, the program goal statements are qualitative but clearly linked to hydrosystem effects. Many of the subordinate program objectives and performance indicators are directly linked to or derived from the program goals and from other efforts to identify metrics directly linked to hydrosystem effects.

Where that is not possible, or where useful objectives or indicators exist from sources that did not parse responsibility for mortality sources, the Council has decided to recognize and use these objectives and indicators in the program, while also being clear in the text that the program's responsibility is but to "contribute to" progress on these objectives and indicators up to the program's goals. In other words, the Council is clear that achieving these objectives and making progress on these indicators is not the same as achieving the program's goals, but the program's contribution toward progress in meeting these objectives can be seen in the interim as making progress toward achieving the program's goals. The most obvious example of that is the way the Council is making use, in the objectives and indicators, of the provisional salmon and steelhead targets developed by the Columbia Basin Partnership Task Force, regionally targets that the group did not allocate responsibility for among hydropower and other mortality sources. See draft 2020 Addendum, at 7-8, 10, 12-15, 16, 19, 21.

Program Strategies

Ecosystem Function

Habitat Protection and Improvement

The 2014 Program includes an overarching strategy to protect and restore natural ecosystem functions, habitats and biological diversity wherever feasible consistent with the goals and objectives of the program of protecting and mitigating for hydrosystem impacts on fish and wildlife. The Ecosystem Function strategy includes a subset of strategies all aimed at contributing to restoring and protecting functioning ecosystems that best serve to protect and mitigate anadromous and resident fish and wildlife affected by the hydropower system, 2014 Fish and Wildlife Program, at 38-75. This includes a first sub-strategy on protecting, enhancing, restoring and connecting aquatic and terrestrial habitat.

The Council received recommendations from the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, and Nez Perce Tribe recommending editorial changes to the “rationale” and “principles” sections of the ecosystem function strategy, a revised definition of ecosystem function, and the additional general measure to reestablish native fish species assemblages.

The Council decided not to revise the text of the Ecosystem strategy or Habitat sub-strategy. The Council does not disagree with the recommended text changes, but on the other hand they would not materially change the substance of the rationale, principles or general measures of the strategy or sub-strategy and would not affect at this time how the program is implemented. E.g., the recommended definition for “ecosystem function” is certainly more detailed and robust than the definition provided in the 2014 program, but each ultimately defines “ecosystem function” as the ability of environmental conditions understood as system to sustain a complex of healthy populations of fish, wildlife, and plants. 2014 Program, at 38. E.g., the Council agrees with and understands the value of reestablishing native fish species assemblages to support ecosystem function – as already recognized in both the first general measures of the Ecosystem Strategy and in the Habitat sub-strategy. Id., at 39, 41. At bottom – and as will be noted often in these findings – the Council’s review of these recommended text changes did not indicate that edits to the main text were needed for the program to be more effective. Recommended changes of this nature will be of value when the time comes again for a wholesale revision of the program’s provisions.

Oregon Department of Fish and Wildlife also recommended an additional measure in the Habitat sub-strategy to emphasize the importance of using research, monitoring,

and evaluation results to iteratively track measurable ecological outcomes (e.g., species viability, threats status/trends, management action effectiveness) and strategically guide future ecosystem protection and restoration actions.

One central purpose of Part I of the draft Addendum is to use monitoring and other information and analyses to better track how the program strategies, including the Ecosystem Function strategy and Habitat sub-strategy, are contributing to achieving the program goals and objectives. This includes adding a set of habitat strategy performance indicators and a commitment to continue working with others to improve the monitoring and evaluation framework especially for tracking and assessing the benefits of habitat improvement actions and using that information in decisionmaking. Draft 2020 Addendum, at 22, 24-25.

The Council also received a handful of recommendations directed specifically at the Habitat sub-strategy. This included recommendations to maintain the Council’s program provisions; recommendations on methods for determining habitat work; and recommendations seeking to emphasize the implementation of habitat improvements in certain areas or tributaries. For example, the Upper Columbia Salmon Recovery Board recommended the Council support the development of standardized tools to be used in coordination with regional efforts to assess and model habitat capacity. The Columbia River Inter-Tribal Fish Commission, Yakama Nation, and Confederated Tribes of the Umatilla Indian Reservation recommended the Council explore opportunities for restoring mainstem habitat by integrating the U.S. Army Corps of Engineers dredging programs for navigation channels maintenance in the mainstem with tributary confluence restoration in order to create new mainstem habitat. The Confederated Tribes of the Umatilla Indian Reservation specifically recommended the Council support a comprehensive and collaborative tributary floodplain restoration approach to be developed by fisheries co-managers and local stakeholders. The U.S. Geological Services similarly recommended floodplain and mainstem habitat measures, including requesting the appropriate agencies to assess how streamflow, sediment, and large wood interact under current management regimes and how those interactions (geomorphic processes) may or may not sustain the success of aquatic and floodplain restoration projects, and increasing research on mainstem habitats that support salmonids, lamprey, and resident fishes and develop a strategy for prioritizing mainstem habitat restoration. Additionally, the Council received recommendations from NOAA Fisheries and U.S. Geological Survey recommending continued support for efforts to move from opportunistic tributary habitat actions to more strategic, targeted habitat restoration; a shift towards “preventative actions”; and related measures.

Again, the Council does not differ with the substance of the recommendations. The Habitat sub-strategy already acknowledges that habitat mitigation must include biologically targeted habitat improvement projects and that protecting existing quality habitat is as important as enhancing degraded habitats. The program also has provisions and an emphasis on both floodplain restoration and mainstem habitat consistent with the substance of the recommendations, including a support for increased investment in mainstem habitat improvements to increase the extent, diversity, connectivity and productivity of mainstem habitats and an emphasis in the program's emerging priorities on improving floodplain habitats. 2014 Program, at 38-43, 64-65, 116. The recommendations would elaborate on the text, but not change the basic substance in material ways. Implementation of actions to restore and reconnect floodplains and improve and connect mainstem habitat are happening and need to continue. The Council did not identify in the recommendations a particular implementation issue that needed to be called out in Part II of the Addendum.

Similarly, the Council recognizes that habitat work can always be assessed and implemented in a more strategic way and through better standardized tools and methods. To that end, as noted above the Council included in Part I of the Addendum objectives and performance indicators to improve our ability to tracking and evaluate the benefits of habitat improvements along with a continuing commitment to develop an improved monitoring and evaluation framework for evaluating and improving how habitat projects are implemented.

*In addition, numerous entities recommended maintaining the commitment to the Columbia Basin Water Transactions Program. The general measures in the Ecosystem Function strategy and Habitat sub-strategy support the water transaction program. 2014 Program, at 42. No program changes are needed to continue that support. A smaller set of entities recommended expanding the support for the program, either in terms of its extent or in terms of its annual funding. *The Council concluded that support in the 2014 Program is as broad as is needed to support water transactions that benefit whatever fish and wildlife are affected by the hydrosystem when the proposed water transaction would address a limiting factor and thus improve the condition of the targeted population. The program itself is not ordinarily the place to address funding levels except when a case is made that the funding levels have substantially hindered or precluded effective implementation. That is not the case here. Any issues about and opportunities missed because of funding levels should be addressed in implementation.**

Strongholds

The Council included a Strongholds strategy in the 2014 Program to acknowledge and encourage efforts to designate and conserve stronghold habitats and their populations of native, wild and natural-origin fish, as well as areas managed for wild fish. The Council included significant measures intended to conserve and protect native, wild and naturally spawning fish. 2014 Program, at 44.

In this amendment process the Council received recommendations relating to the Strongholds strategy from Montana Fish, Wildlife & Parks, Confederated Tribes of Grand Ronde, American Rivers, and Trout Unlimited. The recommendations called for continued Council support of strongholds; for more progress in designating strongholds, including that the Council develop criteria or a process for stronghold designations for focal species throughout the Columbia Basin; for the Council to encourage and support the designation of such areas by the states and tribes; and for the Council to undertake a prioritization effort to identify areas for stronghold status. The Confederated Tribes of Grand Ronde also recommended that the Council clarify that the identification and designation of strongholds is a collaborative effort between the tribes and states.

The Council continues to support the concept of strongholds and the identification and designation of strongholds by the states and tribes, as provided in the 2014 Program strategy and now retained. The Council does not designate strongholds, and there is no particular legal meaning under the Northwest Power Act to such a designation. For this and other reasons, the Council did not identify in the recommendations a specific implementation need regarding strongholds to include in the implementation provisions in the draft Addendum. The Council did include a performance indicator in Part I of the draft Addendum indicating the Council will track progress on stronghold designations by others. Draft 2020 Addendum, at 27.

Non-Native and Invasive Species Predator Management

The 2014 Program's Ecosystem Function strategy includes a Non-Native and Invasive Species sub-strategy aimed at preventing the introduction of non-native and invasive species into the basin and suppressing or eradicating non-native and invasive species already present, to the extent native species affected by the hydropower system are at risk or harmed. 2014 Program, at 46. The 2014 Program also includes a Predator Management sub-strategy to improve the survival of salmon and steelhead

and other native focal fish species by managing and controlling predation rates. Id., at 49.

The Council received a number of recommendations addressing different aspects of the Non-Native and then Predator Management strategies. Overall the recommendations expressed continued support for the Council's strategies, with most seeking either greater emphasis or greater implementation with regard to certain elements.

The recommendations addressing these two strategies overlapped regarding the subject of most interest – the recent proliferation of northern pike in the system. The Council received recommendations from the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Spokane Tribe of Indians, Coeur d'Alene Tribe, Confederated Tribes of the Colville Reservation, Kalispel Tribe of Indians, Nez Perce Tribe, Upper Snake River Tribes, Upper Columbia Salmon Recovery Board, U.S. Fish and Wildlife Service, and Chelan PUD all calling for text changes throughout the strategy to specifically include and address the presence and spread of northern pike. Oregon Department of Fish and Wildlife recommended that potential predatory impacts of northern pike be evaluated, monitoring for their presence in the lower reaches be increased, and a management strategy be adopted should they take hold in the lower Basin. Washington Department of Fish and Wildlife similarly recommended that northern pike expansion be monitored and suppressed as described for non-native species in the Program's Non-natives and Invasive Species Strategy. Upper Columbia Salmon Recovery Board recommended that the Council take a leadership role in developing strategies and partnerships to detect and respond to northern pike. The Confederated Tribes of the Colville Reservation and the Nez Perce Tribe recommended that the Council coordinate economic reviews and analysis focusing on emerging invasive species issues, including the proliferation of the northern pike in the basin. The Spokane Tribe of Indians recommended that Bonneville fully fund and implement the Northern Pike Suppression and Monitoring Project in Lake Roosevelt and also fund appropriate fish and wildlife managers to suppress and eradicate northern pike throughout the entirety of the basin. And Chelan PUD recommended specific language to direct Columbia River Basin fish and wildlife mitigation funding to the appropriate fish and wildlife managers to suppress and eradicate northern pike throughout the entirety of the Columbia River Basin.

While the 2014 Program does not specifically mention northern pike in either strategy, these strategies are directly aimed at suppressing and eradicating non-native aquatic predators that threaten the program's focal species. The program identifies measures to remove and eradicate non-native species and aggressively manage

predators, and calls on the agencies and tribes to prioritize control actions to minimize impacts to native fish species and ensure that funds are spent to address the most significant threats. 2014 Program, at 47. The Council identified expanding predator management and aggressively addressing non-native species as one of the program's emerging priorities. Id., at 116. And so the Council agrees that the 2014 program supports efforts to suppress and eradicate non-native northern pike. To this end, in 2018 the Council reviewed and approved a Northern Pike Suppression and Monitoring project for implementation and recommended funding support from Bonneville. For this reason, the 2020 Addendum calls for Bonneville and others to increase and then sustain the efforts that have begun to assess and remove northern pike from the Lake Roosevelt area and other parts of the basin, and specifically calls on Bonneville to fund and implement the already approved northern pike project. The Addendum also notes that the northern pike problem is an issue broader than the federal hydropower system responsibility and so calls on Bonneville to implement this particular northern pike removal effort while also working with the relevant state agencies and tribes on a strategy to solicit and obtain contributions from other affected entities. Draft 2020 Addendum, at 39.

Beyond northern pike, a number of the recommendations sought edits to or additional provisions in the non-native and predator strategies to emphasize certain aspects or the need for urgency. For some of the many examples: the U.S. Geological Survey recommended that the Council support research and long-term monitoring programs for early detection of invasive species and to seek new and innovative ways to control and eradicate these species. Montana Fish Wildlife and Parks recommended additional language to emphasize the prioritization of prevention and eradication of non-native and invasive species. The Burns Paiute Tribe recommended the addition or editing of a number of general principles, including that the program emphasize multi-jurisdictional approaches to problem-solving and leveraging cost-share; use the best available methods to remove and eradicate non-native and invasive species (including but not limited to piscicide application, electrofishing, gillnetting, sport reward programs, and changes in fishing regulations); use the best available effectiveness monitoring methodologies; refine new technologies and methodologies for implementation and effectiveness monitoring; and provide oversight over Bonneville to ensure that Bonneville institutionalizes regulatory successes to adaptively streamline implementation across similar projects. The Shoshone-Bannock Tribes recommended that additional efforts be made to prevent the introduction of non-native and invasive species in the Columbia River Basin, as well as additional efforts to suppress and/or eradicate non-native and invasive species that are present and negatively impact salmon, steelhead, and native resident fish. The Spokane Tribe of Indians recommended that the Council maintain support for the program strategies; prioritize

the prevention and removal of non-native predators over native predators; and recommended implementation of particular measures, including the northern pike effort noted above. NOAA Fisheries recommended continued support for non-native and predatory fish management actions, while the Oregon Department of Fish and Wildlife supported the program's predation management measures and recommended a greater priority be placed on funding those projects. The Upper Columbia Salmon Recovery Board recommended that the sources, extent, and stock-specific impacts of predation in the Columbia Basin be explored. NOAA Fisheries and U.S. Fish and Wildlife Service recommended that the Council advance the economic and scientific reviews and understanding of system-wide predation management effectiveness. U.S. Geological Survey recommended research to understand the habitat-related predation risk faced by juvenile salmonids; quantify the role that alternative prey has in affecting predation losses of juvenile salmonids; identify the timing, location, and life stages of predators that have the greatest predation impact; and to use life cycle models to better understand predation effects on population survival. Several entities (Washington Department of Fish and Wildlife, Columbia River Inter-Tribal Fish Commission, and Confederated Tribes of the Umatilla Indian Reservation) expressed a concern about what they see as the slow pace of implementation of predator measures, as a result of limited funding, with a call for greater emphasis on implementing predator management measures.

The Council concurs generally with the substance of these recommendations and believes the Non-Native and Predator sub-strategies are already consistent with the principles expressed in the recommendations, even if the Council is not incorporating specific additions or edits to the strategies at this time. Although with different words, the 2014 Program recognizes the role for the program to play in reducing or controlling non-native and invasive species and aggressive predators, where they are identified as a limiting factor on species affected by the hydrosystem and negatively impacting ecosystem function and where taking actions to suppress those species can protect or enhance fish or wildlife survival. Also, "aggressively addressing non-native and invasive species" and "expanded management of predators" are already identified as part of the program's emerging priorities for implementation and will continue as an emerging priority, as reinforced in the draft 2020 Addendum. The program continues to support eradication of non-native species and continued aggressive management of all aquatic, avian and pinniped predators that threaten the focal species of the program. The Council did not prioritize removal of non-native species over management of native predators, as recommended by the Spokane Tribe of Indians, given the overarching concern of so many others with the adverse effects of native predators in an altered ecosystem. But the Council does agree with an equal emphasis on eradicating non-native predators having significant effects on native species. The 2014 Program's

principles and measures also support “multi-jurisdictional” efforts in the sense of encouraging regional efforts to monitor, develop and implement strategies to suppress, reduce or control non-native species and predators, including collaboration among the four Northwest states to implement preventative, eradication and control strategies in their respective management plans and coordinate prevention efforts closely with other states and British Columbia. 2014 Fish and Wildlife Program, at 49-51. The program also recognizes the importance of using the most up-to-date methodologies and research for addressing non-natives and predators, and throughout the program the Council understands that to succeed in achieving its program objectives, the strategies and actions must be founded on the best available scientific understanding of how to address non-native and predators to protect, mitigate, and enhance fish and wildlife affected by the hydropower projects.

The Council incorporated provisions in the implementation section of the draft Addendum to address recommendations concerned about the implementation of actions aimed at pinniped and avian predators, as well as the northern pike measures noted above. Draft 2020 Addendum, at 39-40. Meanwhile, provisions in Part I of the draft Addendum include objectives and performance indicators intended to track and assess the success of efforts to address non-native species and predators, in order to be able to bring that information to bear on improving program implementation in the most effective and efficient manner. Id., at 22, 23.

The draft Addendum also identified in the Part II implementation section, consistent with the amendment recommendations and with the review reports of the Independent Scientific Advisory Board, an overarching need for all program participants to work together to continue developing a more effective, systemwide, ecosystem-based approach for assessing and addressing the impacts of fish, avian, and pinniped predation on salmon and steelhead and other fish species important to the program. This includes using the information generated to understand better which predator management actions have the greatest effect on adult returns and SARs and then retarget efforts on those actions for cost-effective predation management. Draft 2020 Addendum at 39.

Turning to a handful of more specific topics: First, with regard to invasive zebra and quagga mussels, the Legislative Council on River Governance (LCRG) recommended the Council maintain and expand attention to quagga and zebra mussels, especially in seeking adequate funding to support data collection, early detection, monitoring, education and enhancing regional planning and coordination to prevent the spread of these invasive species. The U.S. Geological Survey recommended that the Council support efforts by the 100th Meridian Group and others to control aquatic invasive

species to a preventative level and establish early-detection capabilities for zebra and quagga mussels and other invasive species in the Basin.

The 2014 Program does support maintaining and expanding efforts to address non-native aquatic species, with particular attention and ongoing implementation efforts aimed particularly at quagga and zebra mussels, which will continue. The program calls on Bonneville and other federal agencies to prevent the establishment of quagga and zebra mussels, and if quagga and zebra mussels become established in the basin, the program expects Bonneville and others to support regional rapid-response efforts. Further the 2014 Program includes a general measure calling on the Council itself to work in coordination with others including the 100th Meridian Initiative-Columbia Basin Team in this effort. Finally, monitoring and evaluation for early detection and preventing establishment is included in multiple measures throughout the strategy. 2014 Program, at 46-48. No particular implementation need is called out in the recommendations beyond the efforts already in motion. The draft 2020 Addendum does include non-native strategy objectives and performance indicators to track how the strategy is contributing to achieving the associated objectives and related program goals, including two specific indicators for zebra/quagga mussels. Draft 2020 Addendum, at 22, 23. This part of the Addendum, as well as the discussion above, details how the Council will use the strategy performance indicators to assist in evaluating program performance.

Regarding northern pikeminnow and other predatory fish generally, the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife and NOAA Fisheries all recommended continued Council support for the predation management measures and increased funding. The Oregon Department of Fish and Wildlife specifically recommended the Council continue to support the northern pikeminnow removals, evaluate the effectiveness of the removals and implement adaptive management strategies. Finally, the Spokane Tribe of Indians recommended that the northern pikeminnow removal expansion only occur after all non-native predator measures are fully funded throughout the basin.

The 2014 Program supports the pikeminnow control measures currently being implemented, along with measures calling more generally for the action agencies to work cooperatively with NOAA Fisheries, states, tribes and the Council to develop and implement systemwide strategies to manage and reduce non-native fish species that compete and feed on native fish in the basin. 2014 Fish and Wildlife Program, at 49-50. Pikeminnow removal efforts as implemented are already at a substantial level, and so the Council did not see the need for an implementation provision to expand that effort. The draft Addendum does include predator management strategy performance indicators to track progress on implementation, which includes an indicator to compare

the exploitation rate on northern pikeminnow to the 10-20% annual target. Draft 2020 Addendum, at 23.

The Burns Paiute Tribe recommended that wherever non-native species are identified, brook trout be added as a priority non-native species. *The Council did not see the need to amend the program to add a specific reference to brook trout. The program provisions that call for control and eradication of non-native species cover any non-native fish species having a significant effect on the native species important to the program.*

The Shoshone-Bannock Tribes expressed a concern about a non-native sport fishery for lake trout in designated critical habitat for sockeye salmon due to the potential for migration to other lakes in the Stanley Basin and/or effects to other listed salmonids, recommending that the Council engage directly with managers to develop a strategic plan for reducing and ultimately eradicating this non-native fishery to maximize native fish conservation. *The provisions in the 2014 Program provide the necessary basis to investigate the potential impacts of this non-native species on sockeye. The 2014 Program includes a measure stating that to the extent non-native fish species are used to achieve mitigation, managers should conduct environmental risk assessments of potential negative impacts on native fish species, and non-native species introduced for mitigation fisheries be managed to provide the desired value without adversely impacting native fish populations. 2014 Program, at 47. The Council will continue to assist with regional communication and science/policy forums on non-native species issues, as appropriate. Therefore, the Council understands the program to be consistent in substance with the Shoshone-Bannock Tribe recommendation. More information is otherwise warranted before the Council can identify a specific action for priority implementation.*

The Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife and NOAA Fisheries recommended that avian predation control be continued; Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife would like to see implementation expand. Oregon Department of Fish and Wildlife expressed concern about the failure of implemented avian predation measures to show a connection to the biological goals of effective suppression and increase in fish survival, listing the Inland Avian Predation Management Plan, the Caspian Tern Management Plan, and the Double-crested Cormorant Management Plan as work that is complete or nearing completion but did not fully meet biological goals and objectives. Oregon Department of Fish and Wildlife also expressed concern in the lack of sufficient research to assess the benefit of avian management to salmon returns and called for

this work to occur in the Columbia River estuary particularly as colonies of Caspian terns and double-crested cormorants persist there.

With regard to recommendations about avian predation, the 2014 Program includes measures for the management of predator birds, including encouragement for more aggressive efforts by the Corps and others to make the fullest possible use of their existing authority to remove or manage avian predation that is impacting wild fish populations. This includes measures for the Corps to continue to implement and improve avian-deterrent programs at all lower Snake and Columbia River dams, and measures for the federal action agencies, in collaboration with state and federal agencies, tribes and others to implement predator-bird management actions in the Columbia River basin. 2014 Fish and Wildlife Program, at 50. The Council expects these measures (along with the others in the program) to continue to be implemented, and reinforces this priority in the 2020 Addendum wherein the Council calls for Bonneville, the Corps, and Bureau to sustain efforts to provide adequate support to reduce avian predation to the extent possible. The Council also agrees that measures to address avian predation must ultimately be evaluated along with other predation measures not just to determine the effects on the predator but also to demonstrate effectiveness in increasing the fish survival. Draft 2020 Addendum, at 39, 40. The Council agrees that indicators and metrics that can link predation measures to fish survival are needed, and work will continue to that end following the program amendment process. See the general discussion in Part I of the draft Addendum, at 8, on the commitment to ongoing development of effective indicators; the linkage of one indicator (sea lions) to fish survival, id., at 23; and the discussion in Part II of the need to understand better the effectiveness of predator management to the ultimate goals and objectives of predator management, id., at 39.

Turning to pinniped predation, five entities (the Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Idaho Office of Species Conservation, and NOAA Fisheries) recommended stronger language and action on pinniped predation control. Idaho Department of Fish and Game recommended that the Council continue to support the monitoring and evaluation of sea lion management as new initiatives, such as the Endangered Salmon and Fisheries Predation Prevention Act, are put into place. Idaho Office of Species Conservation agreed with Idaho Department of Fish and Game and added that the Council should remain engaged politically to influence modern legislation. NOAA Fisheries recommended the Council continue to support proactive management of pinnipeds. Oregon Department of Fish and Wildlife recommended that the action agencies expand implementation actions to achieve the biological goals of effective pinniped predation suppression. Washington Department of Fish and Wildlife recommended that the lethal

removal programs and associated monitoring and evaluation plans approved under Section 120 of the Marine Mammal Protection Act be funded and included in the program. Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife recommend specific measures be included in the program to evaluate the effectiveness of the non-lethal removal program of sea lions within the vicinity of Bonneville Dam and an increase in federal funding and program support for expanded implementation of lethal removal of sea lions through Section 120 of the MMPA. Additionally, they recommended that the action agencies should fund federal, tribal, and state agencies to evaluate the extent of sea lion predation on salmonids, sturgeon, and lamprey from Bonneville Dam to the mouth of the Columbia.

The provisions in the 2014 Program already support an aggressive effort to manage pinniped predation, and significant implementation efforts are underway. Out of the recommendations and recent developments the Council did identify, in Part II of the draft Addendum, the opportunity and need presented by new legislation for the federal agencies to provide greater support to the tribes and states for more effective management of pinniped predators. Draft 2020 Addendum, at 39-40. As noted above, the Council included performance indicators to track the effectiveness of pinniped control measures and their relationship to improving salmon and steelhead survival, id., at 23, while also identifying the overarching need to develop a more effective ecosystem approach to predator management, use the program performance information toward that end, and in particular gain greater insights into which predator management actions actually have the greatest effect on adult native fish returns and then adapt our management efforts toward those actions for more cost-effective predation management, id., at 39. The Council has also supported independent scientific review assistance for this purpose, requesting and receiving substantial predation management reviews and recommendations from the ISAB in 2016 and 2019.

These latter provisions of the draft Addendum also dovetail with a final set of summarized recommendations from entities such as Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, the Yakama Nation, Columbia River Inter-Tribal Fish Commission, Confederated Tribes of the Umatilla Indian Reservation, and the Kalispel Tribe of Indians to develop a common metric to evaluate effects of predation and additional technical work to use that information to improve the implementation of predation management measures and accomplish the biological goals and objectives of such management. For further example, Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife recommended that all predation measures continue to be scrutinized through the lens of standardized biological performance, relative efficacy, and a common measure of cost effectiveness to prioritize the most effective suppression actions, and that predation be measured

across the salmon life cycle to evaluate how different predation scenarios affect life cycle survival and changes in population growth rates and abundance. See 2014 Program, at 49; Part II of the draft 2020 Addendum, at 39 (calling for the development of an ecosystem-based approach to assessing and addressing predator impacts with methods that allow for comparison of biological and cost effectiveness). Developing a single or set of common metrics to compare predator management efforts across species is still a work in progress, work that will continue after this amendment process.

Protected Areas and Future Hydroelectric Development

The 2014 Program includes a Protected Areas strategy to protect fish and wildlife from the adverse effects of future hydroelectric project construction and operations. As part of the strategy, the Council supports protecting streams and wildlife habitats from hydroelectric development where the Council believes such development would have unacceptable risks to fish and wildlife. 2014 Fish and Wildlife Program, at 52-53, Appendix F.

The Council did not receive any recommendations addressing the Council's Protected Areas strategy.

Water Quality

The Water Quality sub-strategy in the 2014 Program recognizes the importance of providing flows and water conditions of adequate quantity and quality for improved survival of anadromous and native resident fish populations on the mainstem Columbia and Snake rivers, as well as improving water quality in Basin tributaries to promote healthy and productive populations of anadromous and native resident fish and wildlife. 2014 Fish and Wildlife Program, at 54-56.

The Council received a set of recommendations regarding the program's Water Quality strategy, most of which focused on two topics – climate change and toxic contaminants. *Those recommendations regarding water quality that are also about climate change are discussed in the next section concerning the program's Climate Change strategy.*

With regard to the recommendations about toxic contaminants, the Lower Columbia Estuary Partnership, Columbia Tribes of Grand Ronde, Spokane Tribe of Indians, NOAA Fisheries and U.S. Geological Survey all submitted recommendations on toxics

and toxic reduction efforts. These recommendations included: support for monitoring and research into the effects of toxics; directives for the action agencies to reduce toxic contaminants or their effects if adversely affecting anadromous or resident fish important to the program; additional program language to explicitly state the importance of considering toxics in ongoing efforts to restore and improve habitats; and, sponsorship of collaborative partnerships and working relationships where managers can discuss and develop regional-toxic reduction strategies. In sum, these recommendations call for continued Council support and action to address toxics in the basin consistent with the principles and measures already in the program; the recommendations do not propose material changes.

Through the record developed in the last amendment cycle, the Council acknowledged in the program that toxic contaminants in the river are an emerging issue that may have adverse effects on the health of native fish and wildlife populations and the ecosystems these populations depend upon, thus impacting the program's recovery efforts in the basin. For that reason the 2014 Program includes a set of measures, consistent with the recommendations, that support ongoing efforts to identify, assess and reduce toxic contaminants in the basin; call for an assessment of toxic contaminants on native fish, wildlife, and food webs in toxic hot spots in the basin; and request the action agencies to incorporate pollution reduction and mitigation techniques into restoration projects when toxic contamination is a concern. The measures and actions called for in the current set of recommendations can be found in the program already in some form. 2014 Program, at 54-56. Also, the Council recognized as an emerging program priority for implementation efforts to preserve program effectiveness by, among other things, mapping and determining the hotspots for toxic contaminants. Id, at 116. The 2014 Program also recognized that responsibility for dealing with toxic contaminants in the river is a broad and shared collective responsibility of governments and agencies at every level (as well as private responsible parties). The hydrosystem mitigation program has a definite role to play and should continue to address toxic contaminant issues when it is a logical or necessary and cost-effective extension of ongoing protection and mitigation activities to benefit fish and wildlife and preserve those benefits. The hydrosystem mitigation program does not have sole or dominant or the most significant responsibility for addressing these matters. The Council continues to believe the best approach here is a continued inter-agency collaboration –which the Council will help support – to identify and address these problems, with each agency participating and contributing to an appropriate extent as determined in these ongoing implementation forums. The Council also continues to believe, as expressed in the program, that Congressional appropriations should be the source for major funding support. Id, 54-56, 251-55. The recommendations do not seek to have the Council discard this framework.

The Council did not identify in the recommendations a particular implementation issue that needed near-term attention, and so did not include a provision to that end in Part II of the draft Addendum. In Part I of the draft Addendum, one of the Ecological Objectives of the program is to contribute to maintaining and improving water quality for focal species, followed by a set of water quality indicators regarding temperature, quantify, flows, dissolved gas, and toxic contaminants - tracking whether the potential impacts of toxic contaminants on focal fish species are considered in project development and implementation. Draft 2020 Addendum at 22, 23. Establishing these objectives and indicators is also intended to address broader recommendations from the Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife to track habitat restoration in terms of improvements in water quality and quantity.

The Council received a recommendation from the Kalispel Tribe of Indians to include the 110% dissolved gas standard for Albeni Falls Dam set by the State of Idaho. *The Council has done so in the draft 2020 Addendum, at 23-24.*

Climate Change

The 2014 Program contains a Climate Change sub-strategy, with principles and a number of measures intended to improve understanding as to how climate change may affect fish and wildlife populations important to the program and also affect the success of fish and wildlife mitigation and restoration efforts implemented under the program, and adapt management actions in response. 2014 Program, at 57-59. The 2014 Program also includes a longer discussion of potential climate change impacts in the basin, in Appendix G. And, the 2014 Program recognizes this issue – the need to take into account climate change in an adaptive management effort - to be one of the program’s emerging priorities. Id., at 116. A broad set of recommendations for the 2014 Program emphasized the need to assess and, where necessary, respond to the impacts of climate change, which could threaten the program’s past and ongoing investments in habitat and population improvements in the basin.

The Council received a number of further recommendations regarding climate change in this amendment cycle. These recommendations can be roughly organized into three broad categories: recommendations for a more holistic climate change vision and associated principles and measures in the main text of the program; recommended actions for evaluating and adapting to climate change (including a set of measures

regarding water temperatures as noted in the last section on water quality); and recommendations for an assessment of the economic impacts of climate change.

To begin, the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Burns Paiute Tribe, Yakama Nation, Nez Perce Tribe, Shoshone-Bannock Tribes and Upper Snake River Tribes recommended the program develop and include a comprehensive vision to assess and mitigate likely future climate change impacts to discharge regimes, water temperatures, and fish and wildlife within the basin, and consider existing vulnerability assessments on focal fish and wildlife species and habitats in the basin. The Washington Department of Fish and Wildlife recommending that the Council update the climate change rationale, principle and general measures to reflect the climate change impacts for the changing North Pacific Ecosystem. The Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Burns Paiute Tribe, Columbia River Inter-Tribal Fish Commission, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, Nez Perce Tribe, Shoshone-Bannock Tribes, Upper Snake River Tribes and Sierra Club et. al., each supported development, prioritization and funding of a portfolio of strategies and adaptation actions to compensate for climate change impacts. NOAA Fisheries recommended that these adaptation actions be based on a strategic plan to address the potential impacts of climate change on the entire system. The Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife also recommended that the Council address science gaps and identified specific measures to do so including conducting vulnerability assessments for key species that do not have them, conducting groundwater studies in priority basins with significant groundwater inputs with priority on very cold water source basins, and monitor changes in the hydrograph and water temperature regimes and identify trigger points for adaptive actions and strategies. The Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Burns Paiute Tribe, Nez Perce Tribe, Shoshone-Bannock Tribes, and Upper Snake River Tribes recommended action to collect and synthesize existing climate change modeling and literature, and in line with these recommendations, Upper Columbia Salmon Recovery Board and Lower Columbia Estuary Partnership recommended the Council integrate climate change data to protect past restoration actions and improve future decision; Upper Columbia Salmon Recovery Board, Lower Columbia Estuary Partnership, NOAA Fisheries, and U.S. Geological Survey recommended a review of current restoration and habitat projects to evaluate their climate change resiliency and support the adaptation of tributary habitat restoration and protection strategies to address future climate change. Similarly, the Washington Department of Fish and Wildlife and Upper Snake River Tribes recommended the Council, in coordination with the state and tribal fish and wildlife managers implement measures to support the following actions: classify basins according to a priority scheme, in those basins develop

specific quantitative and qualitative adaption goals to promote resiliency to climate change in focal species and the habitats they depend on, and use an ecosystem model to test specific strategies and actions that can be implemented at the local to basin-wide scale to offset impacts. NOAA Fisheries recommended articulating in the program the need to assess climate change across the entire lifecycle of salmon and steelhead, including impacts in the marine life stages and at the population level. And the Burns Paiute Tribe, Shoshone-Bannock Tribe and Upper Snake River Tribes recommended a basin-wide assessment of the financial impacts of climate change on the program, including economic impacts from differing flood risk management regimes, hydropower production output and costs for conserving fish and wildlife populations.

Many of the broader recommendations noted above include consideration of the link between climate change and water quality, especially rising water temperatures. Additional recommendations specifically on that topic came from Montana Fish, Wildlife & Parks, Oregon Department Fish and Wildlife, Washington Department of Fish and Wildlife, Nez Perce Tribe, Columbia River Inter-Tribal Fish Commission, Yakama Nation, Burns Paiute Tribe, Upper Snake River Tribes, Sierra Club et al., and American Rivers. These recommendations included the need to track, assess and address exceedances of state and tribal water quality temperature standards; develop operational, structural, and water temperature adaptation actions to decrease the likelihood of exceedances as well as remedial and adaptation measures when exceedances do occur or are inevitable; providing access to more consistent cold water for migrating salmon; identifying and implementing actions to reduce state temperature water quality standard violations in the lower Snake and lower Columbia Rivers in particular, including dam and reservoir modifications; support for riparian protection and enhancement to shade tributaries where feasible; development of cold water refuge plans for the Snake and Columbia basins; and restoration of mainstem habitat and access to cold water refugia at tributary confluences within the Columbia River impoundments among others. American Rivers specifically encouraged the Council to place priority on the completion of the assessment and mapping work of cold-water thermal refuges along the mainstem Columbia and tributaries.

In response, the Council notes and appreciates that a number of the recommendations would rewrite and elaborate on the text of the Climate Change strategy in the 2014 Program. As in other situations in this amendment cycle, the suggested text revisions are substantively fine, and none are rejected as inconsistent with the program or with the substantive provisions of the Act, but at the same time these recommendations do not seem to differ materially with or add significantly new concepts and measures to the text of the strategy, or provide a basis for markedly different program implementation at this time. The various recommended measures all

seem within the terms and scope of the set of principles and measures already in the program text, many of which are already the subject of implementation in various ways. The 2014 Program provisions support the actions and efforts outlined in the recommendations, considerations to be addressed through planning and project development, system operations and system modification, and project implementation. While not stated as explicitly as in the recommendations, the Council's program supports and promotes a comprehensive or holistic effort to consider and address the effects of climate change on ecosystem function and focal species through program planning and implementation – an approach emphasized again in the draft Addendum.

Climate change considerations are embedded and addressed not just within the program's Climate Change sub-strategy but also within the broader, program-wide core strategy of Ecosystem Function and in various other strategies and sub-strategies (including habitat and mainstem habitat measures, water quality measures, mainstem operations, wild fish protection considerations, resident fish mitigation, and principles and strategies of adaptive management). The 2014 Program includes a number of measures relevant to the current recommendations for assessing and evaluating the effects of climate change and evaluating adaptive management actions to minimize these effects on the program restoration efforts. For example, the program includes a complex set of measures calling on the federal action agencies, in coordination and collaboration with others, to assess whether climate change effects are altering or are likely to alter critical river flows, water temperatures, or other habitat attributes in a way that could significantly affect fish or wildlife important to this program, either directly or by affecting the success of current mitigation efforts - and if so, to evaluate whether alternative water management scenarios, including changes in flood control operations, could minimize the potential effects of climate change on mainstem hydrology and water temperatures; assess and revise, if necessary, ongoing monitoring efforts to ensure collection of necessary data on key species responses, interactions, and productivity under future climate scenarios; investigate the feasibility of mitigating climate change impacts in the estuary and plume through changes in hydrosystem and flood control operations; and evaluate the effectiveness and feasibility of possible actions to mitigate effects of climate change, including selective withdrawal from cool/cold water storage reservoirs to reduce water temperatures or other actions to create or protect cool water refugia in mainstem reaches or reservoirs. 2014 Program, at 57-58.

Beyond those measures, the Council encourages continued monitoring and public awareness of pertinent climate change research and information; the Council supports ongoing studies and the development of assessment methods by the federal action agencies and others, and the Council requires that project sponsors consider and plan for different climate scenarios that could affect their work. Id. While the economics and

financial impacts of climate change may be mostly beyond the Council’s statutory responsibilities, the Council encourages others to investigate the potential to assess the economic impacts of climate change and in the proper circumstance will assist in economic reviews of this information with the aid of independent economists. And as noted above, the 2014 Program identifies climate change as part of the emerging priorities for the program to “implement adaptive management (including prioritized research on critical uncertainties) throughout the program by ... taking into account the effects of climate change.” Id., at 116. For these reasons, the Council concluded that revising the program strategy did not seem to be a necessarily effective task at this stage. Recommendations of this type will be useful when it is time again for a comprehensive revision of the program.

At the same time, the Council explicitly recognized in the draft Addendum that the recommendations continue to highlight the overarching challenge involved in implementing a program to improve environmental conditions for fish and wildlife while climate change is redefining those very same environmental characteristics. 2020 draft Addendum, at 6, 35, 36. Consistent with the recommendations, the Council included indicators in Part I intended to track how climate change is affecting the environment that fish and wildlife survive in (including changes in stream temperatures, stream flows, and location of cold-water sources) as well as affecting the chances for success in program implementation in the face of environmental change. Id., at 22-24, 26. With regard to program and project implementation, the Council did not identify in the recommendations a specific action or small set of actions that needed to be explicitly called out for implementation, given that many of the relevant program measures are already implemented in various ways, and continued progress to expand how the program grapples with climate remains one of the program’s emerging priorities. And so the Council did not include a specific implementation need in Part II. Instead, the Council noted a different and overarching need – calling for everyone involved in the program to incorporate considerations of climate change across all aspects of the program, planning and implementation, so as to better understand the implications of climate change and how to make the most effective decisions for fish and wildlife in that context. The Council is facing the same issue in its power planning preparation for the 2021 Power Plan – in essence, how to understand and embed climate change impacts and climate change policy in all relevant aspects of fish and wildlife and power planning and implementation. To help in this effort, the Council intends to establish a standing science-policy forum on climate change to help the Council and others better understand the implications of climate change and better inform regional power and fish and wildlife decisions. Id., at 36.

Turning to the recommendations that contain an enhanced focus on water temperature considerations and water quality standard exceedances, consistent with these recommendations the 2014 Program already addresses water temperature issues and various measures for dealing with those issues in the Ecosystem Function strategy and the Habitat, Mainstem Habitat, Water Quality, Climate Change, and Mainstem Operations sub-strategies. The program includes general measures to address water temperature, including, for example, measures for the federal and non-federal project operators to continue real-time monitoring and reporting of water temperatures measured at fixed monitoring sites in the Columbia River Basin; measures for the federal action agencies, FERC and the non-federal project operators, in cooperation with the EPA and others, to update and implement the Water Quality Plan for Total Dissolved Gas and Water Temperature in the Mainstem Columbia and Snake Rivers, and to monitor water quality parameters and implement water quality improvement measures to reduce water temperatures. 2014 Program, at 54-55. And in the Climate Change sub-strategy, the program includes measures requiring the explicit consideration of the possible effects of climate change in the future planning and program implementation actions, measures for an evaluation of whether alternative water management scenarios could minimize the potential effects of climate change on mainstem hydrology and water temperatures, and measures noted above for an evaluation of the feasibility of the other possible mitigation actions that include selective withdrawal from cool/cold water storage reservoirs to reduce water temperatures or other actions to create cool water refugia. *Id.*, at 57-58. These measures are just a subset of the measures in the current program that address the recommendations received regarding water temperature, climate change and adaptive actions to offset the impacts. See also Mainstem hydrosystem flow and passage operations strategy, at 64-66; Lamprey strategy, at 96. Beyond these program measures, and consistent with the recommendations, the draft 2020 Addendum addresses water temperature through four different strategy performance indicators, which include tracking water temperature conditions related to program-funded habitat projects with a focus on water quality to determine if actions are contributing to meeting water quality standards; tracking the number of days above lethal fish temperatures at fixed monitoring sites in the mainstem; tracking the percent exceedance of state and tribal water quality temperature standards at fixed monitoring sites in the mainstem; and tracking how program participants are using available information about climate change impacts and documenting how this is informing restoration prioritization and implementation. Draft 2020 Addendum, at 23, 24.

Mainstem Hydrosystem Flow, Water Management and Passage

In the 2014 Program, Mainstem Hydrosystem Flow and Passage Operations are a sub-strategy of the broader program-wide Ecosystem Function strategy. 2014 Program, at 60-67. Mainstem flow, water management, passage and habitat conditions related to flow are also found in the Ecosystem Strategy itself, the Habitat, Mainstem Habitat, Water Quality, Climate Change, Estuary and Plume and Nearshore Ocean sub-strategies, and the separate Sturgeon, Lamprey and Eulachon strategies. Id., at 38-39, 42-43, 54-55, 57-58, 68-69, 70, 90-91, 94-95, 97.

As a brief overview, the Council received recommendations addressing the mainstem operations and the mainstem flow, water management, and passage sub-strategy. Recommendations focused on revamping spill operations, some emphasizing a stronger Council role to develop future innovative spill operations. A handful of recommendations offered operation modifications for the Libby and Hungry Horse Dams and supported Grand Coulee operations, HCPs for the mid-Columbia projects, and passage at Albeni Falls. Also, several recommendations focused on evaluating mainstem passage to improve conditions for anadromous and resident fish species. The recommendations received are summarized in more detail below.

A reminder to begin with is that the Council received a number of recommendations simply to retain the 2014 Program without major revision or even any revision, and at most to incorporate or recognize recent developments, most notably the new 2019 Columbia River System Biological Opinion and the extensions of the Columbia Basin Fish Accords, which cover a larger portion of mainstem flow and passage operations. (E.g., Idaho Department of Fish and Game, Idaho Office of Species Conservation, Columbia River Inter-Tribal Fish Commission, Confederated Salish & Kootenai Tribes, Confederated Tribes of the Colville Reservation, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, U.S. Fish and Wildlife Service, Bonneville). No one recommend a significantly different approach to or set of measures for mainstem operations.

The Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife did recommend minor textual changes throughout the mainstem strategy, while supporting overall the current program and largely recommending retention of the current language, with some exceptions regarding spill discussed below. Both entities and the Sierra Club, et al. continued to support the program principle that the program is broader than the Endangered Species Act and that measures should benefit all native species, not just listed salmon and steelhead, which is a key element of the program's mainstem provisions. The Upper Columbia Salmon Recovery Board recommended the

program support management of system operations for multiple purposes, including improved habitat conditions in balance with other congressionally authorized purposes, such as power generation, and an evaluation of adaptations to the power system with tools such as life cycle modeling.

The Council concluded that the recommendations in general provide a solid basis for retaining the text of the 2014 Program's mainstem section. The Council also concluded that the text of the 2014 Program, in combination with these findings, is sufficient to recognize the hydrosystem operations and standards in the 2019 Columbia River System Biological Opinion the 2018 Accord Extensions as a continuing part of the program's mainstem measures and objectives. The Council did include in the draft Addendum ecological objectives and performance indicators related to the mainstem provisions – juvenile dam passage survival standards; adult passage survival; power house encounter rates; adult lamprey passage rates; flows through the hydrosystem; and water temperatures and dissolved gas conditions. Draft 2020 Addendum at 11-12, 18, 22, 23-24. Specifically focused recommendations and considerations follow.

A number of the recommendations and subsequent comments specifically addressed spill operations:

- The Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, and Nez Perce Tribe recommended the Council support and facilitate regional collaboration to develop future innovative spill operations, aimed to increase anadromous salmonid smolt to adult return rates to reach regional recovery goals in the 2-6% range. Key elements from this set of recommendations included establishing a suite of survival performance metrics, advocate for more flexible state total dissolved gas standards, modify or design additional surface passage alternatives, monitor outcomes utilizing Comparative Survival Study life-cycle modeling, fund additional passive integrated transponder tagging, and use results to inform future operations.
- In comments received on the recommendations, the Columbia River Inter-Tribal Fish Commissions, Confederated Tribes of Umatilla Indian Reservation, and the Yakama Nation supported generally the substance of Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, and the Nez Perce Tribe recommendations as complementary to the recent Accord Extension commitments, noting that the program should promote flexibility to adapt to changing needs and innovation solutions. The Columbia River Inter-Tribal Fish Commission and Confederated Tribes of the Umatilla Indian Reservation both recognized the assistance provided by the Council's technical power staff in developing the current flexible spill management suite of operations, and

recommended the Council support the regional alignment that has resulted from collaborative efforts on mainstem spill to encourage further innovations.

- NOAA Fisheries recommended the Council continue to support the spill operations along with other mainstem dam and system-wide water management operations in the Columbia River System biological opinion; recommended the Council support the development of monitoring and evaluation programs focused on assessing the efficacy of the higher spill levels at mainstem dams; and that the Council provide a forum, in collaboration with NOAA Fisheries and other federal, state, and tribal entities, to discuss, review and evaluate alternative means of assessing predicted benefits, the number of years of such evaluations would likely need to be implemented, and results from ongoing studies.
- U.S. Fish and Wildlife Service recommended that the program seek to optimize the benefits of whatever spill regime is established to support juvenile salmon passage through spillways and provide the greatest benefit to returning adults, call for the installation of PIT detectors on spillway weirs, where feasible, to facilitate monitoring of juveniles; and continue to support that upstream and downstream fish passage facilities and fish protection measures be funded and maintained at a level commensurate with other project purposes, such as power generation, flood risk management and navigation.
- U.S. Geological Survey recommended the Council review the Decision Memorandum from the NWPCC Fish Tagging Forum and consider deployments of JSATS or other active telemetry systems to measure compliance with BiOp performance standards, including the spill operations.
- American Rivers also recommended that the Council support and facilitate regional collaboration to develop future innovative spill operations, and recommended a number of priorities to consider for improving declining runs of anadromous fish including all options and innovations for future spill operations in the basins. American Rivers noted that innovative spill operations may provide options to mitigate climate change impacts on flows, water temperatures and water quality and can provide support for the potential of a shifting migratory timing of all life cycles of salmon and steelhead.
- Framing their recommendations by stating that protection and restoration of mainstem habitat conditions, including adequate flow and passage conditions, are fundamental to a legally sufficient program, Sierra Club et al., recommended a set of actions to that end: support for a permanent modification of the Oregon and Washington water quality standards for total dissolved gas to eliminate any forebay total dissolved gas (TDG) standard and allow TDG levels of up to 125% in the tailrace of each dam on the lower Snake and lower Columbia rivers; establish a level of voluntary spring spill that maximizes salmonid survival and protects fish and wildlife resources; review and describe the biological benefits to

juvenile salmon survival from voluntary spring spill up to 125% TDG on a 24-hour basis at all eight lower snake and lower Columbia River dams, and also one or more flexible bases that would take advantage of power pricing opportunities in the Northwest and elsewhere; review the biological benefits to juvenile salmon survival from voluntary summer spill, including potentially increasing the level and/or duration of summer spill, to increase salmonid survival rates and improve SARs, explaining that the voluntary summer spill should be evaluated under existing state water quality standards for total dissolved gas and modified standards that allow spill for up to 125% of saturation, and on the basis of various flexible summer spill operations.

- Bonneville provided comments that the Council should limit the program's specificity on the flexible spill operation agreement because operations will be iterative and contingent on actions by state regulators.

The Council supports the collaborative federal, state and tribal agreement on the flexible spill operation incorporated into the 2019 Columbia System Operations Biological Opinion, which includes near-term operations and commitments to further collaborative planning to decide on spill operations for the longer term. Alternative operations are also being analyzed in the Columbia River System Operations EIS. The Council stands ready on an ongoing basis to help the federal, state and tribal entities with both future planning and implementation of these spill operations and with review of their results, whether power system analysis or review of the biological benefits. This did not seem necessary to say so in the draft Addendum. Regarding the U.S. Geological Survey recommendations, the Council believes that any issues about the appropriate monitoring approach for the spill operations should be handled at this point within the continued federal, state, and tribal collaboration on spill operations and not in program language. Outside the program amendment process, again, the Council is willing to help the relevant entities with their planning and implementation review needs in whatever way would be useful, including further questions about the most appropriate cost-effective monitoring technologies.

Montana Fish, Wildlife and Parks submitted recommendations to refine the operations at Libby and Hungry Horse dams, operations developed through the cooperative work of Montana, the Confederated Salish & Kootenai Tribes, and the Kootenai Tribe of Idaho. The recommended revisions include adjusting the summer draft targets more gradually when inflow forecasts are close to the driest 20-percentile threshold to smooth transitions as inflow forecasts vary; setting reservoir draft and refill targets using project specific inflow forecasts, rather than water supply forecasts for the mainstem Columbia River at The Dalles, because water supplies in the headwater subbasins often differ substantially in volume and runoff timing as compared to the

mainstem Columbia River; adjustments to the Storage Reservoir Diagrams that decrease reservoir drawdowns during dry water years; at Libby Dam mesh variable flow (VarQ) flood management with the White Sturgeon tiered-flow strategy; and replace the variable end-of-December draft target with a fixed draft point every year. Finally, the recommendations supported existing program language to investigate opportunities to expand VarQ-like operations to other storage projects, and, recommended new program language that supports the incorporation of new knowledge from ongoing work to inform hydrosystem operations that promote ecosystem function. The Kootenai Tribe of Idaho recommended that the program ensure that these recommending entities and federal agencies can continue to incorporate new information and refine operations.

The Council included these recommendations in the draft 2020 Addendum, calling on the Corps of Engineers and Bureau of Reclamation to implement these refinements, working with Montana and the tribes. One premise of the recommendations – and thus also in the provision in the Addendum - is that these changes will not adversely affect flow conditions for fish in the lower river in any way other than negligible. Draft 2020 Addendum, at 38-39.

The Spokane Tribe of Indians recommended that the existing program language regarding operations at Grand Coulee Dam remain in the program and be implemented. In an exchange of comments on the recommendations, Bonneville and the Spokane Tribe of Indians and the Confederated Tribes of the Colville Reservation differed over whether conditions were ripe for the program to call for a more flexible approach to fall operations at Grand Coulee Dam, permitting the operators to manage the Lake Roosevelt to a minimum elevation of 1283 feet by the end of October rather than the end of September. *After discussions, Bonneville, the Spokane Tribe of Indians and the Colville Tribes asked the Council not to address this issue in the draft Addendum, effectively retaining the language on Grand Coulee Dam operations in the 2014 Program. Any proposal to shift the fall operation needs further evaluation, information generation, and discussions between the project operators and the fish managers before proceeding.*

The Upper Columbia Salmon Recovery Board (Upper Columbia Salmon Recovery Board) recommended the Council identify survival bottlenecks in the federal hydrosystem from Priest Rapids tailrace to the Columbia River estuary, instead of between McNary forebay and the Bonneville tailrace, to ensure a broad understanding of the entirety of the impacts from the federal hydrosystem on Upper Columbia species; and for an evaluation of adaptations to the power system with tools such as life cycle modeling. *The Council agrees with the basic principle, as shown by the program provisions on understanding and addressing hydrosystem impacts broadly, from*

headwaters effects into the estuary and plume. There is obvious logic to the Upper Columbia Salmon Recovery Board recommendation; in terms of specific changes in monitoring and evaluation, there are also some obvious possible drawbacks and expenses that would be involved in shifting the federal system passage survival analyses. As with the U.S. Geological Survey recommendation above about passage effectiveness monitoring, the Council believes that this is an issue for consideration first within the continued federal, state, and tribal collaboration on mainstem operations, and in the Columbia River System Operations EIS, and is not yet ripe for program language.

The Columbia River Inter-Tribal Fish Commission, Yakama Nation, and Confederated Tribes of the Umatilla Indian Reservation recommended a technical workgroup to be led by the Council to identify and evaluate opportunities to address fish passage and survival impacts at tributary delta/sediment fans in the dam impoundment, in consideration of opportunities for restoring mainstem habitat and access to cold water refugia. Separately, U.S. Geological Survey recommended the Council include a measure to seek, from appropriate agencies, an assessment of the key components of a sediment budget for the lower Columbia River.

The program's Ecosystem Function Strategy and Habitat/Mainstem Habitat, Mainstem Passage and Estuary sub-strategies include principles and measures consistent with these recommendations on sediment in the mainstem pools and in the lower river, if not in the same words. Sediment flows and sediment fans in the mainstem should be one of the environmental effects of the dams and their operations analyzed in the Columbia River System Operations EIS. The Council otherwise did not see a need to call out a specific implementation priority in the draft Addendum; the time may be ripe after the conclusion of the EIS.

Sierra Club et al. recommended the Council also review the biological benefits to salmon survival from breaching or removal of the four lower Snake River dams and from other structural modifications of the lower Snake and lower Columbia River dams and reservoirs, such as seasonal drawdown of the John Day reservoir, and detail a course of action to implement that maximizes salmonid survival and protects fish and wildlife resources.

Alternatives such as recommended here are under study in the Columbia River System Operations EIS. Again, the Council will be available to help the relevant entities involved in this planning effort review issues and outcomes in whatever way would be useful, including assisting in review of power system implications and biological benefits. No other entity, especially not the state or federal fish and wildlife agencies or tribes, recommended that the Council at this time embark on its own separate review of

the biological benefits of mainstem dam breaching or other major structural and operations modifications.

Chelan PUD recommended the Council again recognize the Mid-Columbia Habitat Conservation Plans and their role in protection and recovery of listed and unlisted salmon and steelhead, while including recognition of the no-net impact achievements that have been realized. Chelan PUD also recommends that the Council include language from the 2009 program on mid-Columbia hydroelectric projects. NOAA Fisheries recommended support for implementation of settlement agreements and biological opinions for FERC licensed projects within the Columbia River basin.

The 2014 Program continues to recognize that the program’s baseline measures and objectives for the mainstem include the flow regimes, passage actions and performance standards identified and agreed to by the operators of the Mid-Columbia and other FERC-licensed projects in FERC licenses and associated agreements, biological opinions and HCPs. 2014 Program, at 63, 65. This includes implicit recognition of the broader commitments and context for these operations and standards, including recognition of the no-net impact commitments and achievements in the Mid-Columbia area. The Council concluded it did not need to amend the 2014 Program text to continue the program’s support for these provisions – recommended text revisions may be appropriate when the Council next comprehensively revises the program.

The Oregon and Washington Departments of Fish and Wildlife recommended the Council track and review the outcome of the FERC relicensing process for Idaho Power’s Hells Canyon Complex and, as appropriate, include in the program relevant provisions recognizing the operations to benefit fish below the Hells Canyon Complex as part of the flow measures of the program. *The Council agrees with the recommendation – no action necessary at this point.*

Kintama recommended the program evaluate the feasibility of attaining the current 2-6% SAR target. A number of comments on the recommendations cautioned that is premature to consider this recommendation, as the research by Kintama on which it is based has not yet been peer reviewed.

The Council retained as a biological objective of the program contributing to achieving a smolt-to-adult return ratio in the 2-6% range (minimum 2-percent; average 4-percent) for listed Snake River and upper Columbia salmon and steelhead, as well as for non-listed populations. See draft 2020 Addendum, Part I, at 10, 11-12, 24. The Council would likely need to see support from at least some of the salmon fish and

wildlife agencies and tribes before changing this objective. As described in Part I of the draft Addendum, this is one of the objectives against which program performance will be assessed. But at this point, the Council suggests the research and analysis behind this recommendation be submitted to (and considered, if submitted and appropriately supported) the federal, state, tribal collaboration of mainstem operations and the CRSO EIS process.

Finally, the Council received a number of recommendations relating hydrosystem operations and survival impacts to lamprey, sturgeon and eulachon. *These recommendations are addressed below in the discussion of the program's separate strategies for those species.*

Estuary

The Estuary sub-strategy is another element of the 2014 Program's overarching Ecosystem Function strategy. The intent of the Estuary sub-strategy is to protect and enhance critical habitat and spawning and rearing grounds in the Columbia River estuary and lower Columbia River. The program recognizes that the ecological functions in the estuary have been altered by upriver actions including the construction and operation of the hydropower system, as well as by actions in the estuary itself, and that habitat-improvement actions in the estuary have the potential to improve survival benefits for salmon and steelhead affected by the hydropower system. 2014 Program, at 68-69; see also at 39, 42-43.

Regarding the Estuary strategy, most recommendations received in this cycle focused on continued program support for planning, implementation and monitoring and assessment of habitat projects in the estuary. NOAA Fisheries recommended support for continued planning and implementation efforts to continue the reconnection of historical floodplain areas below Bonneville Dam and to evaluate the success of habitat restoration in the estuary. The U.S. Geological Survey concurred with the ISAB's conclusion that an important information gap limiting program evaluation is the lack of quantitative estimates of survival of juvenile salmon, steelhead, and other focal species in the estuary. Thus the U.S. Geological Survey, and the Lower Columbia Estuary Partnership, both recommended support for additional funding to monitor habitat conditions in the estuary and close gaps in analyzing how restoration actions affect habitat conditions for target salmon species and for forage fish and ultimately for salmon survival. Focusing particularly on forage fish, U.S. Geological Survey recommended support for efforts to identify spawning and rearing habitats of key forage fish species in the estuary, determine the role of forage fish as prey in the lower estuary, and

determine how restoration projects in the estuary contribute to reproductive success and rearing of forage fish. The Lower Columbia Estuary Partnership noted that the entire ecosystem, including especially the estuary, has to be considered when assessing challenges to salmon survival and evaluating successes, and that to protect our program investments in survival elsewhere, the program must continue to monitor juvenile salmonid use of the estuary and the conditions that affect this use in order to improve our understanding of how estuary conditions ultimately affect salmon and steelhead survival and maintain and improve adult returns.

In developing the draft Addendum, the Council concluded that changes in the Estuary sub-strategy text were not needed – that the program’s provisions on estuary habitat improvements, estuary ecosystem function, floodplain habitat restoration and reconnection (including as an emerging program priority), food web considerations and other matters are consistent with the substance of these recommendations and sufficient to provide support for implementation. The Council agrees with the need to keep improving the monitoring and evaluation framework to track estuary conditions and how fish are using and responding to those conditions better understand the effectiveness of restoration actions.

In the Addendum, in Part I on Program Performance and Adaptive Management, the Council committed generally to continue working with NOAA Fisheries, the fish and wildlife agencies and tribes, Bonneville and others to develop an improved monitoring, evaluation and research framework to assess the effectiveness of habitat actions, understand how fish use that habitat, direct future research related to habitat restoration and species response, and hopefully continue to improve the implementation of habitat improvements as a result. Draft 2020 Addendum, at 33-34. This logically includes estuary habitat, how that habitat is used by juveniles, and the effectiveness of habitat improvements. The Council did identify one particular need, in Part II of the Addendum, related to these recommendations: the value of continuing the research undertaken by the Corps of Engineers that sampled juvenile salmon at sites in the estuary and yielded important information regarding habitat use in the estuary and the benefits of estuary habitat restoration. Draft 2020 Addendum, at 38. Otherwise, the Council notes and supports the continued efforts, consistent with the recommendations, to implement habitat restoration activities in the estuary and to monitor and assess effectiveness under the federal Columbia River System Biological Opinion and the Columbia Estuary Ecosystem Restoration Program (CEERP) under that biological opinion umbrella. The Council also included, in Part I of the draft Addendum, relevant if general ecological objectives relating to habitat improvements; habitat strategy indicators some of which relate to the estuary habitat conditions; and a specific estuary habitat indicator to track acres of estuary floodplain protected or restored. Draft 2020 Addendum, at 22, 24.

The Lower Columbia Fish Recovery Board recommended additional program investments in tributary habitat actions in the lower Columbia River as an appropriate off-site mitigation strategy to offset the adverse effects on lower Columbia stocks from hydrosystem alterations of estuary habitat conditions. *With the inclusion of the lower Columbia subbasin plan in the program in the mid 2000s, the Council recognized that habitat improvements in lower Columbia mainstem and tributaries can be part of an appropriate off-site mitigation strategy if targeted at improvements for species and populations adversely affected by the Columbia hydroelectric facilities. The Council did not identify in the recommendations a particular implementation issue that needed resolution in the Addendum.*

Recommendations regarding eulachon overlap with the estuary considerations. *These recommendations are addressed below in a separate discussion of the 2014 Program's Eulachon strategy.*

Plume and Nearshore Ocean

The 2014 Program's Ecosystem Function strategy also includes a Plume and Nearshore Ocean sub-strategy. The purpose of this strategy is to support efforts to research, monitor and assess ocean conditions and the associated use of the ocean and plume by and survival of Columbia River salmon and other anadromous fish. This information is intended for use to support mitigation and management actions that improve the survival, growth and viability of Columbia River fish in varying ocean conditions. The program recognizes that the ocean environment, especially the plume, is an integral component of the Columbia River ecosystem. Understanding the conditions anadromous fish face in the river plume and the nearshore ocean will help identify factors most critical to species survival, growth, and viability, and help inform the mitigation actions that will provide the greatest benefit in support of the Council's program. 2014 Program, at 70-71. The strategy in the program – and the information about the ocean generated through that strategy - also helps implement the requirement in Section 4(h)(10)(D) of the Power Act that the Council consider the impacts of ocean conditions on fish and wildlife populations as the Council makes implementation and funding recommendations out of project review.

The Council received a handful of recommendations on the Plume and Nearshore Ocean sub-strategy. As with many of the other strategies and recommendations, many of the recommendations in this instance explicitly or implicitly support the provisions in the text and the importance of continuing to research and monitor developments in the

ocean to help identify factors critical to species survival, growth, and viability, and help inform the mitigation actions that will provide the greatest benefit. In particular, NOAA Fisheries recommended continued support for the premise that the Columbia River and nearshore ocean are linked ecosystems that together affect the growth and survival of salmonids during their life-cycle, and continued support for the research, monitoring and analysis that allows for regular reporting of ocean indicators of salmonid status, including the work that links estuary and ocean conditions. NOAA Fisheries also recommended updating the ocean section to reflect the knowledge and scientific gains since the 2014 program; recommended that the Council continue the Ocean Forum; and explicitly recognize as part of the important ocean work evaluating ocean predator-prey relationships relevant to salmonids. U.S. Geological Survey similarly recommended that additional effort be put into understanding the role of forage fish in the plume and nearshore ocean, including how ocean hypoxia and acidification could affect forage fish. The Lower Columbia Estuary Partnership recommended continued support for monitoring of juvenile salmonids as well as environmental conditions in the ocean and plume, while also noting that investment in the ocean and plume region as well as the estuary has unfortunately lagged in recent years. And the Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife both recommended continued Council support for the ocean research, including support for international efforts and partnerships to understand migration, distribution, and survival in the ocean.

The Council concluded that the provisions of the Nearshore Ocean Plume sub-strategy in the 2014 Program are consistent with and support the substance of these recommendations. Recommend textual changes can be considered at the time the Council comprehensively revises the program.

In the draft Addendum the Council recognized the value of NOAA’s “stop light indicator chart of ocean conditions” as one of the Program’s performance indicators. Draft 2020 Addendum, at 26. The connection between the data produced annually through trend monitoring and through addressing critical uncertainties provides the opportunity to further our understanding of the effect of ocean conditions on program performance.

More important, the Council agrees with the recommendations about the increasing value of the information - to the hydrosystem protection and mitigation program - generated about ocean conditions and how fish use the nearshore ocean and plume habitats. The information is needed to identify and isolate the effects of ocean conditions on the survival, growth, and viability of Columbia River anadromous fish that the program endeavors to protect and mitigate through other program strategies. One of

the aims of the Addendum is to recognize and capitalize on how information about ocean conditions and how fish use the ocean can affect program performance.

For this reason, Part II of the draft Addendum includes a provision emphasizing that the monitoring and research actions that generate a basic yet important level of information about the ocean are a core part of the program that need to be preserved. Draft 2020 Addendum, at 37-38. The annual information delivered by the program's ocean strategy and ocean research effort in recent years has become especially important, with unusual ocean conditions resulting in increased ocean temperatures, changes in food sources, changing predator-prey relationships, and subsequent reductions in survival for many stocks. A further indication of the importance of this work is the growing interest and participation in the Council's Ocean Forum, in which information and ideas are shared between the ocean researchers and the fisheries management entities. And yet in recent years Bonneville has substantially reduced support for the ocean research work, to the point that critical elements and information are at risk. Thus the Council calls on Bonneville to restore and sustain the funding and implementation of ocean monitoring and research at the level recommended by the Council and supported by the Council's independent science panels, a level that would support these components:

- *Continue to develop, use, and improve indicators for ocean conditions.*
- *Investigate and assess the correlations between salmon, their survival, and the ocean environment.*
- *Continue to develop forecasts of survival.*
- *Continue to investigate links between freshwater actions and conditions to responses by salmon in the ocean.*
- *Continue to investigate predator and prey relationships for salmon in the ocean.*

Wildlife Mitigation

The final sub-strategy in the 2014 Program under the overarching Ecosystem Function Strategy calls for mitigation for the losses to wildlife caused by the development and operation of the Columbia hydroelectric facilities. 2014 Program, at 72-75.

The Council received a number recommendations on the Wildlife Mitigation sub-strategy. The Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Nez Perce Tribe, Kalispel Tribe of Indians, and Coeur d'Alene Tribe recommended continued support for the Council's wildlife mitigation strategy to fully

address the assessed construction and inundation losses, including support for the program’s call for mitigation at a 2:1 crediting ratio for losses remaining after 2000 and for the use of settlement agreements with an alternative mutually agreed-to formula for crediting losses. The first three entities further recommended revision or clarification of the program’s caveat that the 2:1 ratio is not to apply in any situation in which “loss assessments appear inaccurate due to habitat unit stacking” and those inaccuracies cannot be resolved through the use of other methods. The Kootenai Tribe of Idaho noted that disagreement continues to persist over the value of habitat units that have been mitigated for construction and inundation losses at Albeni Falls stemming from the 2:1 ratio, and recommended the Council provide a process to clarify and define any “apparent inaccuracies.” The Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife each recommended the Council and Bonneville complete permanent or long-term funding agreements to mitigate for wildlife construction and inundation losses, with funding tied to approved loss statements or agreements. The Spokane Tribe of Indians recommended that Bonneville provide adequate funding to obtain and maintain the habitat units to mitigate completely for the construction and inundation losses at Grand Coulee. Bonneville acknowledged a remaining construction and inundation loss obligation in southern Idaho, but believes that it has otherwise largely completed construction and inundation loss mitigation and the program focus should shift to operational losses.

The Council concluded that the Wildlife Mitigation sub-strategy in the 2014 Program is sufficient to support the completion of mitigation for the identified construction and inundation losses, consistent with the recommendations. The Council included in Part I of the draft 2020 Addendum a set of objectives and performance indicators describing the remaining construction and inundation losses, based on the best information the Council has on the progress of mitigation to date and the provisions in the Council’s program. Draft 2020 Addendum, at 28-31. The Council continues to endorse the provision in the program that whenever possible, Bonneville and the fish and wildlife agencies and tribes should use long-term agreements to obtain the remaining mitigation for losses identified in the program, agreements that include a committed level of funding to achieve and sustain the mitigation objectives. To the extent the language in the Council’s program on possible “inaccuracies” and “stacking” presents an obstacle to an agreement, the Council will work with the relevant parties to resolve the problem on a case-by-case basis rather than alter the provision at this time. The Council will consider revising or removing this provision when next comprehensively revising the program. Finally, Bonneville and the Spokane Tribe of Indians should include considerations of wildlife mitigation as they collaborate to bring about the broad suite of mitigation actions in the Grand Coulee/Chief Joseph area called for in Part II of the draft Addendum. Id., at 36-37.

More recommendations concerned the concept of operational losses of wildlife. The Kootenai Tribe of Idaho and Montana Fish, Wildlife and Parks both recommended that the Council amend the table of wildlife losses in Appendix C of the program to include the identified wildlife losses associated with ongoing operations of Libby and Hungry Horse Dams, and recommended the program allow for the development of long-term agreements among the resource managers and Bonneville to address those losses. The Confederated Salish & Kootenai Tribes similarly recommended recognizing in the program the completed operational loss assessment for Hungry Horse Dam and the beginning of mitigation for those losses. The Spokane Tribe of Indians recommended the program direct Bonneville to provide funding for an operational loss assessment above Grand Coulee Dam. The Coeur d'Alene Tribe similarly recommended the negotiation of long-term settlement agreements with agencies and tribes consistent with the program that will increase wildlife mitigation funding to address operational and secondary impacts with priority given to funding impacts in habitat above Chief Joseph and Grand Coulee dams and other blocked areas of the basin, agreements that also address the additional loss to wildlife from lost anadromy. The Kalispel Tribe of Indians similarly noted the need for terrestrial wildlife and plants to help offset the loss of salmon production in the blocked areas, and, therefore, recommended a number of measures including that operational and secondary impacts must be mitigated on an ongoing basis. The Oregon Department of Fish and Wildlife, Nez Perce Tribe, and the Washington Department of Fish and Wildlife each recommended support for completing assessments of operational and secondary losses and for the completion of mitigation and restoration actions where operational and secondary loss assessments have been estimated and/or addressed in settlements. Washington Department of Fish and Wildlife and the Nez Perce Tribe also recommended textual revisions to the rationale section of the program that emphasize operational and secondary loss mitigation and the need for consistent funding for operation and maintenance crucial for maintaining habitat value and function. As noted above, Bonneville recommended the focus of the wildlife element of the program shift to consideration of operational losses and to maintenance of existing mitigation, although Bonneville also noted that the Columbia River System Operation EIS will contain an analysis of operational impacts to wildlife and that several issues need resolution before proceeding with addressing operational impacts.

Consistent with the recommendations, the decision to retain the 2014 Program provisions includes the program's ongoing commitment to mitigate for operational and secondary losses that have not been estimated or addressed and the provisions calling for Bonneville to work with the fish and wildlife agencies and tribes to identify and address losses to wildlife caused by the operation of the hydropower projects. This includes the use of long-term agreements to settle operational losses, if possible, in lieu

of precise assessments of impacts. Implementation should continue under these provisions. Where operational losses have been identified by an assessment – such as at Hungry Horse and Libby – or by inclusion in a wildlife mitigation settlement agreement – such as in the Willamette and elsewhere – the Council included these in the program’s revised objectives and performance indicators in Part I of the Addendum. Draft 2020 Addendum, at 28-29, 30. The program also already identifies the particular importance of wildlife mitigation in the blocked areas, and as noted above, considerations of wildlife mitigation, including operational losses, should be one part of the discussions to bring about the broad suite of mitigation actions in the Grand Coulee/Chief Joseph area called for in Part II of the draft Addendum, at 36-37.

Finally, multiple recommendations expressed continued support for sufficient operations and maintenance funding and appropriate agreements to ensure project areas are protected and dedicated to wildlife benefits (Spokane Tribe of Indians, Washington Department of Fish and Wildlife, Nez Perce Tribe, Confederated Salish & Kootenai Tribes, Kalispel Tribe of Indians, and Coeur d’Alene Tribe). The Kalispel Tribe of Indians also recommended that the Council continue to fund and support the monitoring and evaluation of habitat changes and management using Upper Columbia Wildlife Monitoring and Evaluation Program methods and protocols, and that the program provide funds to manage areas on tribal mitigation lands to protect tribal first foods. The Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, and Nez Perce Tribe each recommended that the Wildlife Advisory Committee process be formalized to ensure full participation of all interested parties.

The Council concluded the provisions in the 2014 Program continue to support the substance of what was recommended. The program calls on Bonneville to work with the agencies and tribes to maintain the values and characteristics of existing, restored, and created habitat; for long-term mitigation agreements to include a “committed level of funding that provides a substantial likelihood of achieving and sustaining the stated wildlife mitigation objectives” and “[p]rovisions for funding long-term maintenance of the habitat adequate to sustain the minimum credited habitat values for the life of the project in order to achieve and sustain the wildlife mitigation objectives”; and for any wildlife agreement “that does not already provide for long-term maintenance of the habitat, Bonneville and the applicable management agency shall propose a management plan adequate to sustain the minimum credited habitat values for the life of the project.” 2014 Program, at 73, 74. To reinforce these principles, the draft 2020 Addendum includes as an ecological objective the need to contribute to maintaining and improving habitat quality on land purchased to mitigate for hydrosystem impacts on wildlife by developing and using approved land management plans for all parcels purchased under the program. Draft 2020 Addendum, at 29. The draft Addendum also

includes associated performance indicators for tracking the strategy's contribution to achieving the wildlife objectives and program goals, including that all program-funded land parcels have an updated stewardship agreement that are evaluated on a five-year cycle to verify that they are being managed as required by the applicable agreement. Id., at 30. Regarding the Wildlife Advisory Committee, the provisions of the program are sufficient to support reinstatement of the Committee if that is the desire of the wildlife managers – something that can occur outside the program amendment process. 2014 Program, at 75.

Fish Propagation including Hatchery Programs

The Council received a number of recommendations regarding the Fish Propagation strategy in the 2014 Program, a strategy that recognizes the use of hatchery programs as tools to help meet the mitigation requirements of the Northwest Power Act. A general explanation before summarizing the specific recommendations: The Council developed the strategy's rationale, principles and general measures over the last couple of decades of interaction with fish and wildlife agencies and tribes, independent science review panels, conservation groups, Bonneville and the other federal agencies and others, and based on constant considerations of the best available science from numerous artificial production reviews and the most up-to-date policy and management considerations. The particular provisions in the 2014 Program were also crafted after substantial coordination and consultation on the recommendations at that time. 2014 Program, at 76-78, 284-94. *The bulk of the recommendations received by the Council in this amendment cycle are consistent with the substance of the program provisions, and none of the recommendations caused the Council to consider the need to revise these provisions by introducing new or significantly altered concepts. Also, substantial production programs and facilities are already implemented under the program, nearly all subject to significant multi-year implementation and funding commitments and all with extensive monitoring and evaluation elements. So with the exception that production activities as recommended by the Spokane Tribe of Indians should be one part of the considerations that Bonneville, the Spokane Tribe of Indians and others discuss as they collaborate to bring about the broad suite of mitigation actions in the Grand Coulee/Chief Joseph area called for in Part II of the draft Addendum, at 36-37, the Council did not identify in Part II a pressing implementation need with regard to production activities under the program.*

What the Council did need to address in the draft Addendum, consistent with a subset of the recommendations, was the role of artificial production in the program's goal, objectives and performance indicators, and how to assess at the program level the

performance of artificial production in meeting the program's objectives. For this reason, Part I of the Addendum includes the following provisions related to artificial production and program performance:

- *Regarding the program's goal for anadromous salmon and steelhead, the Addendum recognizes both that the program has always assumed artificial production will be one of the strategies used to achieve this goal and that the proportion of hatchery fish contributing to this goal should decrease as natural production increases. Draft 2020 Addendum, at 10.*
- *Fish Propagation performance indicators that track progress toward provisional goals for hatchery-origin releases and hatchery-origin adult returns for different salmon and steelhead runs and areas of the basin. The program also recognizes that these particular numbers were developed in a process that did not parse out responsibility between mitigation for hydropower impacts and other purposes and sources of impacts. Thus as explained in the addendum, achieving these indicator targets is not the same as achieving the program's goals and objectives, but the program's contribution toward meeting these numbers is a way of demonstrating that progress is being made toward achieving the program's mitigation goals. Draft 2020 Addendum, at 7-8, 10, 12-13.*
- *Fish Propagation performance indicators that track the performance of specific program hatcheries in meeting the objectives identified in their management plans, which include objectives intended to protect the survival, fitness and productivity of naturally spawning fish that might be affected by hatchery operations. Draft 2020 Addendum, at 12. The Council has also initiated an informal hatchery work group that may inform standardized hatchery metrics and indicators.*
- *Biological objectives and performance indicators for robust populations of naturally-spawning fish, with the recognition that achieving those natural-origin objectives will depend in part on ensuring that the hatchery fish produced in the in the system are not an obstacle to supporting the desired level of abundance and productivity of naturally-spawning fish. Draft 2020 Addendum, at 10, 14-15.*
- *A program objective and associated performance indicator to track progress in addressing the program's research critical uncertainties - one of which is to better understand the interactions of hatchery and naturally-spawning fish, and another concerns investigating density dependence issues that may arise if the desired*

total abundance of hatchery-origin and natural-origin fish exceeds carrying capacity of the habitat. Draft 2020 Addendum, at 25, 27.

- *The Council recognizes the potential importance of indicators that might be used to track interactions between hatchery-origin and naturally-spawning salmon and steelhead at a level above particular production programs, such as the proportion of hatchery origin spawners (pHOS) and proportion natural influence (PNI) identified by the Hatchery Scientific Review Group (HSRG), indicators already monitored by many hatcheries. The Council also concluded that further discussions are needed about the use and value of indicators such as these for program performance, discussions that will be part of the ongoing effort to improve the performance indicators following the amendment process.*
- *White sturgeon performance indicators that similarly track the performance of specific propagation hatcheries against identified objectives in the management plans for those hatcheries. The Addendum also includes performance indicators in terms of abundance for white sturgeon populations in different areas of the basin, derived from sources that include the contribution of artificial production to those abundance targets. Draft 2020 Addendum, at 16-17.*
- *Lamprey performance indicators that similarly track the performance of any artificial production activities implemented to boost lamprey populations by tracking the abundance and distribution of Pacific lamprey throughout their native range in the Columbia River Basin to determine if the numbers and range are increasing over time. Draft 2020 Addendum, at 18.*
- *Similar performance indicators related to the use of artificial propagation activities as a tool to contribute to population objectives for various resident fish species, including cutthroat trout, kokanee, bull trout, redband trout, and burbot. Draft 2020 Addendum, at 19-20, 21.*
- *A commitment on the part of the Council to keep working with Bonneville, NOAA Fisheries, and the other fish and wildlife agencies and tribes on an improved basinwide research, monitoring and evaluation framework, including specific guidance for tracking, assessing and reporting on the performance of production activities in contributing to program goals and objectives at multiple scales above individual projects. Draft 2020 Addendum, at 33-34.*
- *Also in Part IB of the draft Addendum, recognition of the need for certain information gathering and data-management capabilities to be retained and*

adequately supported, so as to generate the information needed for program performance assessments, including the benefits and effects of artificial propagation. Draft 2020 Addendum, at 34.

What follows is a brief summary of the recommendations received and how the Council handled them within the framework discussed above:

A number of recommendations reinforced the existing provisions in the program regarding hatcheries and the existing production activities that implement these provisions. The Nez Perce Tribe recommended the program continue to recognize that artificial production actions constitute, along with habitat improvement measures, a primary means of achieving mitigation and compensation for losses arising from the development and operation of the Columbia basin hydroelectric facilities. The Washington Department of Fish and Wildlife, Montana Fish, Wildlife and Parks, Confederated Tribes of the Grand Ronde and Bonneville all recommended or noted in various ways that at least for the foreseeable future hatcheries will continue to play an important role in mitigation and augmenting numbers of fish for subsistence, recreational, and commercial harvest, as well as in the recovery of imperiled species. The Confederated Tribes of the Umatilla Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, Yakama Nation, and Columbia River Intertribal Fish Commission recommended the Council retain the 2014 Program provisions and adopt as measures all actions identified in the 2018 Accord extensions, including the production commitments. The recommendations emphasized the need for ongoing stability for hatchery operations and maintenance, consistent funding for hatcheries, and the need for parties to collaboratively seek to identify a method to document the biological benefits associated with hatchery projects. The Confederated Tribes of the Colville Reservation similarly recommended the Council recognize the actions in their Accord extension as part of the program, implicitly including the production actions. And the Kootenai Tribe of Idaho similarly recommended the need for continued implementation of the Kootenai River Native Fish Conservation Aquaculture Program.

The Council retained the Fish Propagation provisions of the 2104 Program, and in doing so also retained the commitment to the particular production measures recognized in the program and implemented on an ongoing basis. In both the 2009 and 2014 versions of the program the Council recognized that the actions committed to in the Columbia Fish Accords are measures in the program. This continues with the Accord extensions and with the other existing production measures in the program (such as in the Kootenai River); these production commitments are measures in the program and implementation should continue.

The Idaho Department of Fish and Game and Idaho Office of Species Conservation submitted coordinated recommendations acknowledging the program's role in artificial propagation and hatchery reform practices and noting the need for careful consideration of the interactions and tradeoffs involved when attempting to improve the conditions for and abundance and productivity of natural spawning populations while also employing artificial production for mitigation and rebuilding purposes. They recommended: that research, monitoring, and evaluation of hatchery produced fish and their genetic and competitive interaction with wild conspecifics should be a high priority area of study for the program; continued importance of requiring each production project sponsors to define each type of hatchery program (mitigation, conservation, integrated, segregated or combination) and that each hatchery program have clearly stated goals and objectives; careful consideration of interactions and tradeoffs in the context of developing population goals, objectives and indicators, assessing program performance, implementing integrated vs. segregated conservation aquaculture programs, and understanding how project implementation influences population abundance and fitness outcomes; defining and incorporating a set of indicators for hatchery programs into the program's adaptive management framework, including, for example, quantitative objectives for hatchery fish, numbers of fish spawned and released, returning hatchery adults, and recruits per spawner; support for the use of genetic tools such as parentage-based tagging and genetic stock identification; and support for continued evaluations of relative reproductive success and integrated broodstock management program.

The Council concluded that the provisions of the Fish Propagation strategy of the 2014 Program already reflect the substance of these recommendations. And the Council developed objectives and indicators and program performance commitments in Part I of the draft Addendum consistent with the recommendations, as described above.

NOAA Fisheries similarly recommended that the program continue to support and advance hatchery reform; recognize and apply production management strategies and objectives developed through hatchery and genetic management plans (HGMPs), biological opinions and recovery plans; continue to support and be consistent with *United States v. Oregon* production goals as described in the *U.S. v. Oregon* management agreement and associated biological opinion; and identify and prioritize research and monitoring and evaluation to address gaps in information and understanding that contribute to policy disagreements about the viability of listed species in the context of artificial production.

The Council's program continues to support the concepts in NOAA's recommendations, including the HGMPs and other hatchery reform efforts, the U.S. v.

Oregon production commitments and management plan, and the other matters raised. The program's production measures and projects, and the objectives and indicators related to fish propagation in Part I of the draft Addendum, all reflect, among other things, production commitments and objectives in U.S. v. Oregon and relevant biological opinions, in HGMPs and production management plans, and in recovery plans. Continued research and monitoring and evaluation related to hatchery production and effects on species viability (listed and non-listed) remain a key part of the Council's research plan and research uncertainties and has also been factored into the objectives and indicators and program performance indicators as described above. The same provisions in the program and in the draft Addendum also reflect the coordinated recommendations of the Nez Perce Tribe, Washington Department of Fish and Wildlife, and Oregon Department of Fish and Wildlife calling for monitoring of hatchery returns; for Bonneville to report annually on the number of juvenile fish released each year and the number of adults that contribute to harvest, used for broodstock or are present on the spawning grounds for all hatchery programs that receive Bonneville funding, for Bonneville to require all research, monitoring and evaluation projects to report annually, including those related to production, providing an electronic summary of their results and interim findings as well as an assessment of the benefits to fish and wildlife; and for an assessment and improvement of data exchange standards for hatchery-origin salmon and steelhead. To the extent the performance indicators can be improved to better track these matters and inform program performance, the Council is committed to working with others to make those improvements. And, Part IB of the draft Addendum explicitly calls out the need to improve data exchange standards. The Council did not identify in these recommendations any specific implementation need to set forth in Part II of the draft Addendum.

Trout Unlimited submitted a related set of recommendations, recommending that the cumulative effects of hatchery releases be regularly assessed given the latest information on density dependence; calling for the Council to be a convener and repository of relevant information from all the different hatchery operations in the basin for this purpose; and recommending research to understand whether hatchery fish possess the most appropriate genetic and phenotypic characteristics for the environments in which they will be placed and on the interaction of hatchery and non-hatchery fish in light of density dependence considerations that might limit production of natural-origin fish.

The Council notes that individual production programs do monitor and assess these interactions, but also agrees that the ongoing challenge is to improve how we monitor, assess and report on these interactions at a level above individual programs to better understand the cumulative impact of Columbia River production policy on natural-origin

fish in limited if improving habitats. The provisions of the Fish Propagation and Wild Fish strategies in the 2014 Program are a start, as are the performance metrics and considerations in Part I of the draft Addendum, along with the Council's ongoing commitment to further developing this aspect of production policy following the amendment process.

The Conservation Angler recommended that the Council adopt a river and population specific policy consistent with the best scientific evidence for wild salmonid protection and recovery, which would include significantly assessing and limiting artificial production. *The Council concluded that the current program provisions and implementation focus appropriately on both wild fish population protection and improvements and responsible propagation policy, consistent with the long-standing recommendations of a wide array of fish and wildlife agencies and tribes and others. But the Council also recognizes, as discussed above, the need to continue to improve how the program and the region assesses, understands and adaptively manages the interaction of natural-origin and hatchery-origin at levels above individual propagation activities to meet the population goals and objectives of the program.*

Finally, the Coastal Troller Association and American Rivers recommended significant increases in Columbia River Chinook hatchery production to enhance forage opportunities for the listed southern resident killer whale population, consistent with Washington's Southern Killer Whale Recovery Task Force comprehensive report and recommendations. The Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife more generally supported the task force recommendations and then submitted comments on the recommendations that maintaining and increasing Columbia hatchery Chinook salmon production for this purpose would be consistent with both the program and the task force recommendations.

The salmon and steelhead objectives and indicators for both hatchery-origin and natural-origin fish (derived from the Columbia Basin Partnership provisional goals) reflect increases in basin-wide hatchery and natural-origin production over time, in particular Chinook stocks that are considered priority prey items for Southern Resident Killer Whales. The Council also recognizes that the Washington legislature provided funding to increase hatchery salmon production in the Columbia basin to benefit southern resident killer whales, with conditions to implement increases in a manner that does not impede the recovery of wild fish populations. Hatchery production that is maintained or increased to provide for mitigation, serves a broader ecological purpose, and is operated in a manner consistent with wild fish objectives is consistent with the 2014 Fish and Wildlife Program. For these and other reasons, the Council did not see

the need to add an implementation measure in Part II based on these recommendations.

Wild Fish

The 2014 Program included a Wild Fish strategy, recognizing that native wild fish and the ecosystems that they rely on must be protected and enhanced as an important and genetically diverse biological resource for the basin, well within the context of the Council's mitigation responsibilities. The strategy notes that habitat restoration is a key strategy in the program, and that it is essential to maintain and rebuild healthy, diverse, self-sustaining fish and wildlife populations by protecting, mitigating, and restoring ecosystem conditions on which the fish depend through their entire lifecycle. The purpose of the distinct Wild Fish strategy is to help ensure that adequate attention is given in program implementation to protecting, mitigating, and enhancing populations of wild fish, while also recognizing that hatcheries are an important tool for mitigating the hydrosystem's impact on fish and, in certain cases, may also be used to assist in rebuilding natural-origin populations. 2014 Fish and Wildlife Program, at 80-81.

The Council received a number of recommendations with some relevance to the Wild Fish strategy. *Most of these recommendations overlapped with other program strategies. A good example were recommendations that linked climate change impacts and native wild fish, such as recommendations for increased emphasis on restoring and protecting thermal refuge areas to protect native wild fish from the detrimental effects of climate change. Any such recommendations are addressed in the discussions relating to the other strategies. Also, a number of recommendations focused on the interactions between hatchery-origin fish and natural-origin fish; they have been addressed in the prior section of the Fish Propagation strategy. Also, the Spokane Tribe of Indians linked a number of their recommendations for protection and mitigation actions in the blocked area above Grand Coulee and Chief Joseph dams to the Wild Fish strategy among other things. Those recommendations are addressed below, in the discussion of the blocked area strategy. What are addressed here are only the few recommendations particularly focused on or directly linked to the program's Wild Fish strategy.*

As noted above, many entities called on the Council to recognize in some way the provisional quantitative goals for natural-origin salmon and steelhead developed in the Columbia Basin Task Force Partnership process. (Idaho Department of Fish and Game, Idaho Office of Species Conservation, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Nez Perce Tribe, Upper Snake River Tribes, NOAA Fisheries, Sierra Club et al., Trout Unlimited). *The Council has done so,*

in the salmon and steelhead goal and objectives and in particular in the performance indicators for the wild fish strategy in the draft Addendum. Draft 2020 Addendum, at 7-8, 10, 14-15. The Council also included goals and objectives focused on assessing the program's efforts at protecting and improving native resident fish as well. Id., at 16-17, 19-21.

Related recommendations from the Idaho Department of Fish and Game and the Idaho Office of Species Conservation include evaluating progress toward meeting quantitative escapement goals for natural-origin salmon and steelhead that includes developing a basic understanding of the underlying factors (and relevancy of those factors) affecting achievement of those goals and requires rolling up project sponsor status and trend information at various levels and scales. The same entities along with Washington Department of Fish and Wildlife and the Nez Perce Tribe recommended that the Council adopt and Bonneville fund implementation of the Coordinated Assessments Data Exchange to report on indicators for natural origin spawners, smolt to adult returns, adult to adult recruitment, and juveniles per spawner for both listed and non-listed Columbia River salmon and steelhead populations. *The Council agrees with the need to evaluate program performance in the ways recommended, as described in various ways in Part I of the draft Addendum. The Council did not specifically identify the Coordinated Assessments project, but did call for Bonneville to adequately support the monitoring and data management activities necessary to allow for the program's performance to be assessed in these ways. Draft 2020 Addendum, at 34.*

The Conservation Angler provided the most significant set of recommendations directly relating to the Wild Fish strategy. The organization recommended the Council include in the program not just the Wild Fish strategy, but also add to it specific criteria for river-specific and population-specific management for wild salmon and steelhead conservation and recovery. The recommended criteria would have these basic elements: develop escapement targets by natal spawning area for wild populations of each species to achieve egg deposition and parr production goals; develop and protect a habitat template the supports adult holding and spawning, juvenile rearing and a diversity of life histories; adopt wild spawner escapement objectives for each subbasin plan and fund monitoring and evaluation research to determine effectiveness in meeting these targets and adaptive management improvements were needed; and prevent interbreeding between hatchery and wild fish. The Conservation Angler further recommended the Council devote Council staff specifically to these activities, and also recommended the Independent Scientific Advisory Board evaluate the current management of wild salmon and steelhead in the Columbia River basin, examine whether specific escapement targets exist by species for each natal spawning area, and assess whether harvest is properly regulated to ensure escapement targets are met.

There are many aspects of the 2014 Program and draft program Addendum consistent with the Conservation Angler recommendations. The program's Wild Fish and Ecosystem Function strategies provide support for the implementation of actions for the conservation and enhancement of wild native fish affected by the hydrosystem; the draft Addendum includes objectives and indicators for wild native fish abundance and escapement by geographic area and groups of populations, as well as commitments to assess and report on program performance in meeting those targets; subbasin plans (and recovery plans) included technical assessments of habitat conditions, limiting factors and habitat improvements needed to increase natural-origin fish abundance and productivity, and corresponding management plans and objectives and escapement targets for natural-origin fish; the program supports implementation of substantial natural production monitoring in certain subbasins; and as described in the previous section, the program calls for and funds hatchery practices that do not preclude successful rebuilding of native natural-origin fish, including substantial project-level monitoring and evaluation to that end, as well as a commitment to assess program performance to see if that is achieved while recognizing the need for further development of the most useful indicators of hatchery/natural-origin interactions at a level above individual programs. At the same time, the Council's program is a hydrosystem protection and mitigation program, not by statute a wild fish program, and the Council has relied predominantly under the Act on the recommendations of the fish and wildlife agencies and tribes in striking the right balance. Many of the recommendations of the Conservation Angler are more within the management responsibilities of the agencies and tribes and not the Council's program.

Anadromous Fish Mitigation in Blocked Areas

The 2014 Program includes an Anadromous Fish Mitigation in Blocked Areas strategy specifically focused on ensuring mitigation takes place for the loss of anadromous fish in areas where Columbia basin dams blocked anadromous fish passage. 2014 Program, at 83-86. The strategy has two aspects to it. One is to ensure mitigation in general takes place, using all the tools at the disposal of program participants, including actions to enhance the abundance and productivity of resident fish and wildlife populations, reintroduction of anadromous fish, habitat improvements, artificial production, predator management, operational improvements, and associated research, assessment, monitoring and evaluation activities to identify and track the best mix of alternatives. Id., at 83-84. The other aspect of the strategy in the 2014 Program focused particularly on investigating the possibility of reintroduction, especially in the area above Grand Coulee and Chief Joseph dams, in response to numerous

recommendations from fish and wildlife agencies, tribes, and others to intensify the program's efforts in this way. *Id.*, at 84-86.

Program amendment recommendations in this cycle relate to both aspects of the strategy. The Spokane Tribe of Indians recommended that the program substantially increase the implementation of mitigation actions in the Lake Roosevelt area above Grand Coulee and Chief Joseph Dams. The Spokane Tribe of Indians noted that this part of the basin has suffered the loss of anadromous fish and other fish and wildlife species directly due to hydropower development and operation at a scale at least comparable to and mostly greater than other areas in the basin. And yet these losses have been severely under-addressed and under-mitigated through the Northwest Power Act, especially when compared with other areas and other entities in the basin. The Spokane Tribe of Indians also noted that it had recommended in the past, and the Council had placed in the program since at least 2009, a suite of potential mitigation measures that draw from using all the mitigation tools at the program's disposal (aquatic habitat improvements, operational adjustments, terrestrial and riparian habitat protection and acquisition, artificial propagation, reintroduction, and associated research, monitoring and evaluation) and address a range of species and habitats affected by the development and operation of these dams (kokanee, redband trout, upper Columbia sturgeon, lost anadromous fish, native freshwater mussels, food sources for focal species, predator control, wildlife, and more) – and yet implementation has been limited. The Tribe recommended an updated set of these mitigation measures in significant detail as a ten-year implementation plan, with a call for a significant ramp up in mitigation implementation. The Kalispel Tribe of Indians and the Coeur d'Alene Tribe also submitted recommendations calling on the Council to retain the approach to Anadromous Fish Mitigation in Blocked Areas laid out in the 2014 Program strategy and for the Council and Bonneville to focus on implementation to address unmitigated losses.

Reflecting this recommendation, Part II of the draft Addendum calls on Bonneville to implement a broad suite of actions to mitigate for the complete loss of anadromous fish and the losses to other fish and wildlife species due to hydropower development in the Lake Roosevelt and Spokane River areas above Grand Coulee and Chief Joseph dams, as well as ongoing operational impacts. Bonneville should begin a comprehensive effort over the next five years to intensify, expand, and then sustain the mitigation effort for this part of the basin. In developing this comprehensive effort, Bonneville should work with the Spokane Tribe of Indians and draw from the Tribe's list of mitigation measures recommended to the Council, while both should also consult with the Confederated Tribes of the Colville Reservation and Washington Department of Fish and Wildlife and coordinate with their ongoing work in the Lake Roosevelt area.

The Council expects annual reports from Bonneville and the Spokane Tribe of Indians detailing progress made in this mitigation effort. It is time that the mitigation effort implemented in this area matched the severity of the loss of anadromous and resident fish and wildlife resulting from the development and operation of the hydropower facilities. Draft 2020 Addendum, at 36-37.

The Spokane Tribe of Indians and others also recommended a number of funding mechanisms to make sure this occurred, including allocating at least 45% of the program funding for the geographic area above Chief Joseph and Grand Coulee dams. The Coeur d'Alene Tribe recommended the same funding allocation formula, while the Kalispel Tribe of Indians recommended that 40% of Program funding go to the blocked areas of the upper Columbia. The Coeur d'Alene Tribe and Kalispel Tribe of Indians together recommended an alternative in which all activities implemented to mitigate for the loss of anadromous fish be funded out of the portion of the budget spent on anadromous fish protection and mitigation and that all funding to improve the conditions of resident fish affected by the hydrosystem be directed to the blocked area in the upper Columbia until resident fish harvest opportunities in the blocked areas equal the combined anadromous and resident fish harvest elsewhere in the basin. The Spokane Tribe of Indians also recommended that any and all funds that result from cost savings and program efficiency efforts be directed to mitigation actions in this area. The Kalispel Tribe of Indians recommended more generally that the Council and Bonneville apply the highest priority for funding and implementation to weak and recoverable native populations, and high priority to areas without anadromous fish, to resident fish projects that benefit wildlife and/or anadromous fish, and to populations that support important native and introduced fisheries.

The Council called on Bonneville to increase significantly the level of mitigation for the losses in the area above Chief Joseph/Grand Coulee without compromising the substantive protection and mitigation activities elsewhere in the basin. The point is not to diminish the level of protection and mitigation happening elsewhere in the basin; the point is to lift the mitigation effort in this area to a comparable level, without waiting for or predicating that ramp up on compromising other work or reallocating funds from elsewhere. And in general the Council agrees, and the Resident Fish Mitigation strategy already reflects, that implementation priorities with regard to resident fish mitigation include addressing weak but recoverable native fish populations, areas of the basin where anadromous fish are no longer present, resident fish projects that also benefit wildlife and/or anadromous fish, and populations that support important native and introduced fisheries.

Turning specifically to the other aspect of the blocked area strategy – the specific provisions on reintroduction of anadromous fish – many entities (Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Upper Columbia Salmon Recovery Board, the Burns-Paiute Tribe, Coeur d'Alene Tribe, Kalispel Tribe of Indians, Spokane Tribe of Indians, Upper Snake Rivers Tribes, U.S. Geological Survey, American Rivers, Trout Unlimited, and individuals) expressed continued support for the program's phased approach to reintroduction of anadromous fish above Chief Joseph and Grand Coulee dams, recommending the current language remain in the program while also recommending that the level of attention and implementation be enhanced. E.g., the Upper Columbia Salmon Recovery Board recommended the Council support development of tools to model habitat capacity and relative reproductive success studies for the Upper Columbia region. The Kalispel Tribe of Indians recommended the program language be updated to reflect the near completion of phase 1 and the habitat potential that is now documented, and to call for the implementation of phases 2 and 3. The Spokane Tribe of Indians included, as but one element of the broader suite of mitigation actions discussed above, continued progress on the phased approach to investigating reintroduction in this area, with a call to elevate the work to the top emerging priority for the program. The Spokane Tribe of Indians highlighted specific actions that should be implemented to complete phase 1 and begin work on phase 2, with a detailed action plan that includes translocation of adult Chinook and/or sockeye for cultural releases, salmon rearing in the classroom for regional educational programs, juvenile releases to determine survival and migratory success, outplanting of eggs for habitat seeding to measure survival of early life stages, and the performance of hydrologic modeling to inform the type and location of juvenile and adult fish passage systems. The U.S. Geological Survey recommended selective releases of salmon and steelhead to address survival, travel times, and behavior of adults and juveniles in the tributaries and reservoirs; continued pathogen screening; and food web studies to assess potential carrying capacity issues. American Rivers recommended the Council support all three phases with life cycle modeling genetic studies and an adaptive management approach. Trout Unlimited expressed support for the program's three-phased approach and recommended the Council direct more funding to studies and modeling exercises that will help reduce uncertainties around the habitat suitability above the dams, the anticipated fish response to reintroduction and the most suitable infrastructure to utilize in order to maximize collection of juvenile outmigrants. Many recommended that more funds be directed to complete the phased approach.

The Council concluded that the description of the step-by-step science-based investigation of reintroduction in the 2014 Program remains valid and is consistent with and supports the activities called for in the current set of recommendations. The Council added to Part II of the draft Addendum a provision emphasizing that Bonneville and

others are to continue to make progress on the program’s phased approach to evaluate the possibility of reintroducing anadromous fish above Grand Coulee and Chief Joseph dams. The Council noted in the draft Addendum that continuing to make progress on this measure received substantial support in the amendment process from many governmental and non-governmental entities. Draft 2020 Addendum, at 37. The Council continues to conclude that the Bonneville-funded hydrosystem mitigation program under the Northwest Power Act has a role to play here, and the authority to play that role, while many others also have a role to play – making progress on this effort is not the sole province of the program.

Several entities (Burns Paiute Tribe, Nez Perce Tribe, Shoshone-Bannock Tribes, Upper Snake River Tribes, and U.S. Fish and Wildlife Services) recommended specific language be added concerning anadromous fish passage and reintroduction above Idaho Power’s Hells Canyon Complex in the Snake River. The Burns Paiute Tribe, Shoshone-Bannock Tribes, and Upper Snake River Tribes recommended the Council add new program language to incorporate the Upper Snake River Tribes’ Hells Canyon Complex Fish Management Program Plan, to be used as a long-term vision for restoration of Pacific salmon and steelhead to the currently blocked Upper Snake River Basin. The U.S. Fish and Wildlife Service recommended the Council work with the Upper Snake River Tribes and the State of Idaho to develop a vision of restoration for salmon in the blocked waters of the Upper Snake River. The Nez Perce Tribe recommended a new program measure calling on Bonneville to provide funding to develop a long-term vision, similar to the Council’s vision for Pacific salmon restoration in the Upper Columbia, for restoration of Pacific salmon and Pacific Lamprey to the Upper Snake River.

The 2014 Program strategy includes language recognizing that reintroduction of anadromous fish into any blocked area is one of the legitimate mitigation tools for consideration under the program. More particularly the strategy provides that restoration of anadromous fish to blocked areas should be investigated as mitigation for the impacts of hydropower dams that blocked historic passage of adult and juvenile fish and that the abundance of native fish species should be restored throughout blocked areas where original habitat conditions exist or can be feasibly restored or improved. 2014 Program, at 83, 84. The existing program language supports the recommended investigation into and vision for reintroduction above the Hells Canyon Complex. The Council notes that ongoing discussions about reintroduction involving Idaho, Oregon, the various tribes in the Snake basin, Idaho Power, and others have been taking place in the context of the relicensing of the Hells Canyon dams before FERC. The Council supports these discussions and urges them to continue and for the parties involved to

develop a joint approach to reintroduction if possible. For this reason the Council did not see the need to add a provision on this issue to Part II of the Addendum.

Several entities (Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Burns Paiute Tribe, Confederated Tribes of Grand Ronde, Upper Snake River Tribes, and Trout Unlimited) recommended continued support and implementation of the provision in the blocked area strategy calling on the Corps and Bonneville to support and implement anadromous fish passage measures prioritized through the Willamette River Basin Flood Control Project Biological Opinion. The Confederated Tribes of Grand Ronde specifically recommended that the program alter the language from “should” to “shall” in the measure directing the Corps and Bonneville to support and implement anadromous fish passage measures prioritized through the Willamette River Basin Flood Control Project Biological Opinion. Oregon Department of Fish and Wildlife recommended the language be expanded to include a measure calling on Bonneville and the Corps to fund and implement anadromous fish passage measures prioritized through the Willamette River Basin Flood Control Project Biological Opinion, and, specifically prioritize volitional downstream passage options when feasible and consider combinations of structural and operational solutions to maximize safe and effective passage. Oregon Department of Fish and Wildlife also recommended the measure call for Bonneville and the Corps to support and implement reintroduction plans being prepared by Oregon Department of Fish and Wildlife and NOAA Fisheries.

The Council concluded that the program language regarding reintroduction in the Willamette River remains sufficient and effective to support the ongoing work to investigate and implement reintroduction in the Willamette basin, consistent with the recommendations. 2014 Program, at 83, 84, 86. This topic is an ongoing part of the re-initiation of ESA consultation on the Willamette projects, and the Council supports those continued discussions.

Finally, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, and Upper Snake River Tribes recommended the Council, Bonneville and Bureau of Reclamation support fish passage into other blocked areas, including the Yakima River Basin, Grand Ronde Basin in Wallowa Lake, and other areas of the Basin such as the upper Snake River, with the Oregon Department of Fish and Wildlife recommending the Umatilla River Basin above McKay Creek Dam be included. The Oregon Department of Fish and Wildlife also addressed the Deschutes River basin and recommended the program be amended to add language expressing support for ongoing efforts to restore anadromous fish above the Pelton Round Butte Dam complex in the Deschutes Basin, with particular emphasis on investment in flow transactions conservation actions in Whychus and the lower Crooked Rivers. Michael Ogle

recommended the Council encourage Pacific Power to provide passage at Newport Dam in the Deschutes.

As noted above, the blocked area strategy already includes language recognizing that reintroduction of anadromous fish into any area blocked by the development and operation of the Columbia hydroelectric facilities is one of the legitimate mitigation tools for consideration under the program. Restoration of anadromous fish to blocked areas should be investigated as mitigation for the impacts of dams that blocked historic passage of adult and juvenile fish and that the abundance of native fish species should be restored throughout blocked areas where original habitat conditions exist or can be feasibly restored or improved. 2014 Program, at 83, 84. The existing program language effectively supports investigations into reintroduction of anadromous fish affected by the hydropower system into area such as those discussed in the recommendations. The Council also notes that projects to restore or improve passage for salmon and steelhead and other fish in the tributaries have been a regular part the program's implementation of offsite mitigation habitat improvements for decades. All of the particular recommendations here should have a place for consideration as implementation for mitigation of hydrosystem impacts through regular habitat implementation commitments, whether by Bonneville or other federal agencies or by non-federal entities with FERC-licenses. The Council concluded that adding provisions to Part II of the Addendum are not needed and would not affect the considerations and pace of implementation in these regards.

Resident Fish Mitigation

The 2014 program includes a Resident Fish Mitigation strategy to emphasize the need under the program to protect and mitigate native resident fish and other native aquatic species affected by the development and operation of the hydrostem. Focal species include threatened bull trout, westslope cutthroat trout, redband trout, native rainbow trout, burbot, mountain whitefish, endangered Kootenai River white sturgeon, freshwater mussels and resident life histories of the native anadromous species, such as Columbia River white sturgeon and kokanee. The strategy also makes clear that the panoply of protection and mitigation tools generally available under the program – habitat improvements, system and individual dam operations, artificial production, etc. – may be used to address these hydrosystem losses.

The Council received a handful of recommendations directly relating to the Resident Fish Mitigation Strategy. As a general summary: As noted elsewhere, a number of recommendations supported retaining all the measures and strategies in the 2014

Program, and others specifically supported retaining and implementing the provisions of the Resident Fish Mitigation strategy. *The Council did retain these provisions. The Council received recommendations from the Spokane Tribe of Indians regarding resident fish mitigation in the blocked area above Chief Joseph and Grand Coulee dams, including measures regarding upper Columbia sturgeon, redband trout, kokanee, native freshwater mussels, and other species, while the same Tribe and others recommending funding mechanisms regarding the mitigation work in this area and the relationship to resident fish mitigation funding. These recommendations were addressed in the last section and in Part II of the draft Addendum and are not repeated here. The Council received recommendations, particularly from the Kootenai Tribe of Idaho, regarding the program's ongoing effort to restore Kootenai River white sturgeon. Those recommendations are addressed in the following section on the program's Sturgeon strategy and are not repeated here.*

The Council also received recommendations regarding the program's goals and objectives as they relate to resident fish, either in general or related to specific species, along with associated recommendations relating to adaptive management and program performance evaluations. *The Council addressed those recommendations in Part I of the draft Addendum by reorganizing and adding goals, objectives, and performance indicators for resident salmonids (including bull trout, cutthroat trout, kokanee, and redband trout), for native aquatic focal species (such as freshwater mussels and burbot), and for ecological conditions relevant to all native fish, relevant to resident fish generally, or focused specifically on certain resident fish in certain areas (such as the performance indicators related to restoring habitat for westslope cutthroat and bull trout affected by Libby and Hungry Horse dams). Draft 2020 Addendum, at 19-21, 22, 23, 24, 25, 26. This effort is described in general terms above in the section on Program Performance and Adaptive Management and further discussed below where appropriate. The Council received other recommendations addressing specific species, including freshwater mussels, redband trout, bull trout, and measures regarding resident fish passage and prioritization, as well as recommendations expressing support for initiating, completing and funding resident fish loss assessments and habitat loss assessments. These recommendations are discussed in more detail below.*

The Washington Department of Fish and Wildlife, Confederated Tribes of Grand Ronde, the Kalispel Tribe of Indians, and the Spokane Tribe of Indians each recommended continued support for doing assessments of resident fish habitat losses due to hydropower development and operations. The recommendations from the Washington Department of Fish and Wildlife and Confederated Tribes of Grand Ronde both supported the completion of a standardized methodology for resident fish habitat loss assessments and settlement agreements as called for in the 2014 program. The

Kalispel Tribe of Indians recommended that completing loss assessments and mitigation for unquantified impacts on resident fish as a funding priority. *The Council retains the provisions in the resident fish strategy regarding habitat loss assessments, consistent with the recommendations. The Council also incorporated the loss assessment information that does exist into the program goals, objectives and indicators in Part I of the draft Addendum, as well as set forth goals, objectives and indicators for resident fish mitigation in areas and for species where quantitative loss assessments have not been completed. Draft 2020 Addendum, at 19-21, 22, 26. The Council did not otherwise include an implementation provision in the draft Addendum focused on initiating or completing resident fish population or habitat loss assessments. Assessments of this type are expensive and time consuming, and may not be necessary or cost-effective in all or even most situations in order for protection and mitigation actions to proceed. The need and appropriateness of doing a quantitative assessment should be determined on a case-by-case basis as part of program implementation discussions. Mitigation actions and agreements to address and even settle resident fish and habitat losses should be the path taken wherever possible in lieu of precise quantitative assessments of impacts. 2014 Program, at 87, 88, 178-79.*

The US Fish and Wildlife Service recommended that the measures outlined in the FCRPS biological opinion for bull trout be recognized as part of the program similar to the measures necessary to avoid jeopardizing Pacific salmon outlined in the National Marine Fisheries Service's biological opinion; that the program also include the strategies and actions and conservation actions outlined in the Bull Trout Recovery Plan for the three Recovery Units in the Columbia Basin (Mid-Columbia, the Upper Snake, and the Columbia Headwaters Recovery Units). *The Council included goals, objectives and performance indicators for bull trout in Part I of the draft Addendum, drawn primarily from the U.S. Fish and Wildlife Service recommendations. Draft 2020 Addendum, at 19, 20, 25.*

The Kalispel Tribe of Indians recommended the federal action agencies restore upstream passage for native resident fish at Albeni Falls Dam no later than 2024, with the recommendation including specific measures that called on the action agencies to apply cost-effective value engineering procedures using firms independent of the Corps of Engineers, the submission to the Council of a schedule for providing upstream fish passage at Albeni Falls, and a measure that provides that if the action agencies deviate from this schedule, the agencies are to make operational changes at Albeni Falls Dam to moderate downstream water temperatures for native fish during all critical time periods until upstream fish passage is provided and allow entrained native fish to return to the cold water refugia in Lake Pend Oreille. The Kalispel Tribe of Indians also recommended a new measure to implement habitat enhancement actions to improve

water temperature conditions for the benefit of bull trout and other aquatic species in the Pend Oreille River. The Spokane Tribe of Indians also recommended that the Corps of Engineers and Bonneville work to restore native resident fish passage at Albeni Falls Dam. *The 2014 Program’s resident fish mitigation strategy contains a provision explicitly calling for the Corps and the other agencies to restore passage for native resident fish at Albeni Falls Dam if feasible. 2014 Program, at 89. The program provision is consistent with and sufficient to support implementation as recommended. The question is one of implementation. The Council notes that restoration of resident fish passage at Albeni Falls Dam and Pend Oreille River habitat and water quality improvements are part of the Columbia Fish Accord executed by the Corps and Bonneville on the one hand and the Kalispel Tribe of Indians on the other. The Kalispel Tribe of Indians’ recommendation in this amendment cycle would appear to signal a breakdown in effective implementation of that agreement. The Council calls on the parties to reinvigorate their implementation relationship and resolve this matter, with the Council willing to help the parties to that end to the extent they see a role for the Council. The Council did not include a provision on this matter in the Part II implementation section of the draft Addendum given it is already the subject of an ongoing implementation commitment.*

The Confederated Tribe of Grand Ronde and the Confederated Tribes of the Umatilla Indian Reservation both submitted recommendations regarding freshwater mussels. The Confederated Tribes of the Umatilla Indian Reservation recommended the Council support their recent efforts undertaken to address major population declines in freshwater, which is developing and evaluating various means to supplement natural production of freshwater mussels. The Confederated Tribe of Grand Ronde recommended action agencies evaluate the presence and status of freshwater mussel species and consider the biological needs of all freshwater mussel species and mitigate any adverse effects caused by the hydrosystem. *The Council recognizes in the 2014 Program and in the Native Aquatic Focal Species portion of Part I of the Addendum that freshwater mussels adversely affected by the hydrosystem are a focal species of the program, and thus one of the program goals is to address the hydrosystem impacts to mussels by contributing to various regional efforts to restore and maintain healthy, self-sustaining and harvestable populations of these species, including maintaining a stable and increasing population trend for native freshwater mussels. Draft 2020 Addendum, at 21, 26. The Council also notes and supports the projects addressing freshwater mussels that are being implemented, such as the work noted by the Umatilla Tribes implemented under their Accord agreement. The Council did not identify any particular implementation need that required attention in Part II of the draft Addendum.*

The Deschutes River Conservancy recommended the program further invest in basinwide restoration to protect and enhance native resident fish, including redband trout in the Deschutes River subbasin, and take a Comprehensive Landscape and Ecosystem Function approach as recommended by the Independent Science Advisory Board review of the 2014 Program (ISAB 2018-3). *The Council concluded that the provisions of the Wild Fish strategy and Ecosystem Function strategy and sub-strategies provide the necessary support for implementing native resident fish protection and enhancement to mitigate for hydrosystem impacts. The Council included in Part I of the draft Addendum goals, objectives and performance indicators relating to native resident fish populations, including redband trout (including redband trout in the Deschutes River) in particular. Draft 2020 Addendum, at 19, 20. The Council did not identify any particular implementation need that required attention in Part II of the draft Addendum.*

Chelan Public Utility District submitted a recommendation noting that Chelan is implementing a wide range of fish and wildlife protection, enhancement and restoration efforts within the project areas of the Rock Island, Rocky Reach and Lake Chelan projects, efforts guided by its FERC license requirements and that address native resident salmonid populations such as bull trout as well as sturgeon and lamprey, habitat, water quality, predators (avian and fish), and aquatic invasive species. Chelan recommends that the amended program recognize these efforts and direct the federal action agencies and others to continue their work with Chelan for successful implementation of the fish and wildlife requirements within the FERC licenses. *Consistent with this recommendation, the 2014 Program generally recognizes the actions and performance standards in the FERC licenses and HCPs for the mid-Columbia hydroelectric projects as program measures and objectives. The program could be more clear on this point, and when the program is next revised comprehensively, revisions can be made to more clear and inclusive on this point. But the Council agrees with the recommendation here and concludes that the program does reflect the measures and points made, and supports the continued efforts of Chelan PUD to implement these measures. The Council did not see the need for a particular implementation provision to this end in the draft Addendum, although the Council does note here its support and appreciation for Chelan efforts to help combat the threat of northern pike, the subject of a provision in Part II.*

Finally, the Confederated Salish & Kootenai Tribes supported a provision directing Bonneville to fully support long-term operation and maintenance funding mitigation properties acquired through fee title purchase or protected by conservation easement to ensure these properties are maintaining or improving the fish and wildlife habitat functions that these land acquisitions were intended to protect. *The Council agrees,*

noting that both the wildlife mitigation and resident fish mitigation provisions of the 2014 Program already specify, as stated in Appendix K for resident fish mitigation settlement agreements, that these agreements must include assurance of long-term maintenance of the habitat adequate to sustain the habitat values stated in the agreement for the life of the project, with a committed level of funding that provides a substantial likelihood of achieving and sustaining the resident fish mitigation objectives and adequate funding for operation and maintenance. 2014 Program, at 178-79.

Sturgeon

The 2014 Fish and Wildlife Program included a strategy specifically aimed at Columbia River basin sturgeon. The strategy notes that sturgeon distribution, abundance, and productivity have been severely limited by habitat changes, particularly those associated with hydropower system construction and operation. And the aim of the strategy is to implement actions that result in increased abundance and survival for Columbia River Basin sturgeon, using the various mitigation and protection tools developed elsewhere in the program, including habitat improvements, dam operations and passage, hatchery considerations, population monitoring, research to improve understanding of how the development and operation of the Federal Columbia River Power System affect survival and growth of sturgeon. 2014 Program, at 90-93. The Council also identified the implementation of “additional sturgeon and lamprey measures” as one of the emerging program priorities in the investment strategy. Id., at 116.

The Council received a handful of recommendations related to the sturgeon strategy with many recommending continued support for the current program language, while placing an emphasis on increased implementation funding, monitoring and research. Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife supported the program’s current sturgeon provisions and specifically recommended the program continue to retain sturgeon in the emerging program priorities, maintain current implementation and funding for white sturgeon monitoring and other activities, continue to address critical uncertainties for sturgeon through research, and increase funding for white sturgeon populations monitoring in the Columbia River between McNary and Priest Rapids dams and in the Lower Snake River impoundments pools so that stock status is reported for each pool every three years on a rotating basis.

Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife and the U.S. Geological Survey recommended continued and expanded research, data management, and coordination regarding hydrosystem impacts on sturgeon, critical uncertainties relating to sturgeon decline and survival, and the implementation and assessment of actions to address impacts. Matters recommended include further research into: the relationship between hydrosystem development and operations, including passage obstacles and flow changes, and sturgeon reproductive success; environmental constraints that contribute to a lack of recruitment of age-0 juveniles; the fate and transport of white sturgeon larvae in mainstem rivers; habitat and energetic requirements of sturgeon; the distribution and availability of food resources, especially in the pools and reservoirs; and the effects of contaminants on sturgeon survival and reproduction. (Note that the ISAB, in its review of the 2014 Program, made similar recommendations, noting particularly that the relationship between hydrosystem operations, passage obstacles, and sturgeon reproductive success needs more investigation.) The recommendations also called for the further development of decision support methods to integrate the information available and evaluate options for addressing the hydrosystem impacts; the development of a clearinghouse of sturgeon actions and information for quick analysis, coordination and fostering of communication; the continued use of an interdisciplinary and inter-agency team to think and act collectively on sturgeon actions; the development of a coordinated marking system within the basin; and the inclusion in the program of the recommendations for research, protection and mitigation in the draft Columbia Basin White Sturgeon Planning Framework.

Regarding Kootenai River white sturgeon in particular, the Kootenai Tribe of Idaho recommended the Council recognize the Tribe's integrated fish and wildlife program, which includes the above referenced Kootenai River White Sturgeon Conservation Aquaculture Program, Ecosystem Restoration Project and Kootenai River Habitat Restoration Program, all of which support mitigation and restoration for white sturgeon. The Kootenai Tribe of Idaho and Montana Fish Wildlife and Parks both recommendation that operations at Libby Dam be improved by meshing variable flow(VarQ) flood management with the white sturgeon tiered-flow strategy. Similarly, U.S. Fish and Wildlife Service recommended the Council include measures to recover Kootenai River white sturgeon, specifically recommending support for the Kootenai River White Sturgeon Conservation Aquaculture Program, continued nutrient supplementation in the Kootenai River, restoration of the Kootenai River White Sturgeon habitat in the Kootenai River downstream of Libby Dam, and management of water and temperature from Libby Dam to benefit Kootenai River white sturgeon.

The provisions in the 2014 Program's Sturgeon strategy provide effective support for these recommendations, and so the Council concluded those provisions need not be revised at this time. Implementation of measures to benefit sturgeon also remains one of the program's emerging priorities. The Council included a distinct set of goals, objectives and performance indicators relating to sturgeon affected by the Columbia River hydrosystem in Part I of the draft Addendum, consistent with the recommendations, as well as a general objective and indicator for addressing through research and analysis the program's critical uncertainties, which include the need to better understand both the factors that limit sturgeon success and the value of various mitigation and protection measures. Draft 2020 Addendum, at 16-17, 25, 27. Regarding sturgeon in the lower Columbia and Snake river, implementation of research, planning, and protection and mitigation activities takes places through a handful of ongoing commitments and should continue. Consistent with the recommendations, the Council identified in Part II of the draft addendum two particular items that needed emphasis: evaluation whether alternative flow regimes might increase sturgeon productivity and recruitment in the lower Columbia below McNary Dam and if so, whether and how operations could be altered to provide those flow regimes without compromising protection for salmon and steelhead and lamprey (passage and flow conditions remain a significant obstacle to salmon survival and recruitment); and increases sturgeon population monitoring between McNary and Priest Rapids dams and in the lower Snake River. Draft 2020 Addendum, at 40. Regarding sturgeon in the Kootenai River, the Council continues to recognize, incorporate into the program, and support implementation of the integrated fish and wildlife program in that river, including the white sturgeon program as recommended and implemented by the Kootenai Tribe of Idaho, US Fish and Wildlife Service, and others. The Council included in Part II of the draft Addendum the operational changes at Libby Dam recommended by Montana and the Kootenai Tribe of Idaho. Draft 2020 Addendum, at 38-39.

Finally, the Spokane Tribe of Indians recommended the implementation of a set of similar research, protection, mitigation and propagation measures regarding upper Columbia sturgeon. *This recommendation has been addressed in the draft Addendum and, above, in the sections on blocked area mitigation. Draft 2020 Addendum, at 36-37.*

Lamprey

The 2014 Program also included a distinct Lamprey strategy to implement actions that result in increased abundance and survival for lamprey, which includes habitat actions, dam operations and passage, population monitoring, and research to improve our understanding of how the development and operation of the Federal Columbia River

Power System affects the survival and growth of lamprey. 2014 Program, at 94-96. The Council also identified the implementation of “additional sturgeon and lamprey measures” as one of the emerging program priorities in the investment strategy. Id., at 116.

The Yakama Nation, the Confederated Tribes of the Colville Reservation, the Confederated Tribes of the Umatilla Indian Reservation, and the Confederated Tribes of the Warm Springs Reservation of Oregon each recommended the Council include in the program all the measures included in the 2018 Columbia River Basin Fish Accord Extension Agreements addressing lamprey. The Columbia River Inter-Tribal Fish Commission’s recommendation similarly supported the Columbia Fish Accords and the activities implemented under the Accords, commenting that the goal of the Columbia Fish Accords with regard to lamprey is to proactively avoid Endangered Species Act-listing by boosting survival and abundance, and noted along with the Nez Perce Tribe the importance of lamprey as a treaty and cultural resource, a high value source of food and medicine, and ecologically important as a contributor of marine derived nutrients in the Columbia River basin.

Recommendations from the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife and Nez Perce Tribe supported the existing program language, while also offering textual changes throughout the strategy to emphasize the value of Pacific lamprey, support for the Pacific Lamprey Assessment and Template for Conservation Measures, and to acknowledge recent progress in the program. The U.S. Fish and Wildlife Service commended the Council for including Pacific lamprey conservation measures in the 2014 program, offered continued support for existing measures, and recommended the Council add the following: include lamprey conservation measures in habitat restoration projects that are focused on other species; implement counting mechanisms and annual report passage counts at FCRPS projects for both adults and juveniles; develop marking tags suitable for monitoring and evaluation needs for adult and juvenile lamprey to monitor mainstem and tributary passage and survival; research and monitoring projects focused on the ocean phase of Pacific lamprey and the importance of the Columbia River estuary for juvenile and adult lamprey; and, assess the impacts of dredging on lamprey around dams and navigation facilities. NOAA Fisheries recommended the Council adopt measures from the Pacific Lamprey 2018 Regional Implementation Plans for the Lower Columbia/Willamette, Mid-Columbia, Upper Columbia, and Snake River Regional Management Units and incorporate and support implementation of the 2012 Pacific Lamprey Conservation Agreement. The Confederated Tribes of Grand Ronde similarly recommended that the program explicitly recognize and support efforts to restore Pacific lamprey consistent with the Pacific Lamprey Assessment and Template for Conservation Measures; that

the action agencies, in coordination with the agencies and tribes, support and/or coordinate with the Lamprey Technical Workgroup and the development and funding of measures identified in the annual plans; and recommended the funding of measures to reduce toxins that tend to bioaccumulate in tissues of harvestable Pacific lamprey.

The U.S. Geological Survey recommended the Council implement a PIT-tagging program for lampreys throughout the basin along with a number of research efforts including: determine the potential effects of climate change on all life stages of lamprey and the effects of changing reservoir elevations and potential de-watering or larval lamprey habitats due to load-following or special hydro system operations; studies of juvenile lamprey passage; evaluations of larval and juvenile lamprey interactions with screens; effects of contaminants on lamprey biology, physiology, and performance; explore the impacts of dredging and the feasibility of lamprey aquaculture for supplementing and restoring depressed populations; develop various models for lamprey; and, improve the understanding of river and brook lampreys to help inform and expand our understanding of Pacific lamprey. The Deschutes River Conservancy recommended the Council restore and protect historic habitat for reintroduced populations of pacific lamprey and re-establish pacific lamprey into historic habitat. Finally, while not exactly a recommendation Bonneville noted that additional modifications to fish ladders have been underway to increase passage of adult lamprey, including the installation of specialized lamprey passage structures at Bonneville, The Dalles, and McNary dams.

The Council concluded that the provisions of the 2014 Program are consistent with the substance of these recommendations, including recognition of an expanded set of measures and objectives consistent with and based in the Accords, the Conservation Agreement for Pacific Lamprey, the Tribal Pacific Lamprey Restoration Plan and other sources, as well as continued recognition of implementation of lamprey measures as one of the emerging priorities of the program. As in other situations in this amendment cycle, the suggested revisions and additions to the text are substantively fine, while none seem to differ materially with or add significantly new concepts and measures to the text of the strategy, or provide a basis for markedly different program implementation at this time. The 2014 Program provisions effectively support the actions and efforts outlined in the recommendations.

In Part I of the draft Addendum the Council included goals, objectives and performance indicators particularly focused on Pacific lamprey. Draft 2020 Addendum, at 18. Lamprey measures – including operations and passage, habitat actions, considerations of lamprey production, other research and population monitoring – are currently implemented under a set of commitments by the federal action agencies,

especially the Corps of Engineers and Bonneville through the Accords. This implementation should continue as aggressively as possible. For this reason the Council did not identify a specific implementation need to emphasize in Part II of the draft Addendum.

Eulachon

The 2014 Program included a specific Eulachon strategy intended to increase understanding, protection, and restoration of eulachon in the Columba Basin, with a specific focus at this time of promoting better understanding of the factors affecting eulachon survival and abundance, including how the development and operation of the Federal Columbia River Power System affects eulachon spawning, survival of eggs and larvae, and migration patterns. In adopting these program measures, the Council was careful to ensure that the program measures be limited to assessing how eulachon and its habitat in the lower river were affected by the development and operation of the hydrosystem, and then identifying what measures may be available to address those impacts. 2014 Program, at 97-98.

The Council received a small set of recommendations addressing eulachon in this amendment cycle, with most recommendations received focused on adding eulachon to the emerging priorities and support for a more robust eulachon strategy in the program. The Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Cowlitz Indian Tribe, NOAA Fisheries, and U.S. Geological Survey all recommended the program strategy be updated to reflect the measures and objectives in NOAA's eulachon recovery plan. The Cowlitz Tribe and NOAA Fisheries recommendation that the Council incorporate into the program potential actions 7.3.2. and 7.4.4 from the Council's Eulachon State of the Science and Science to Policy Forum Report; specific recovery actions 5.8, 5.10, 5.12, 5.12.1, 5.12.2, and 5.12.3 from the 2017 Eulachon Recovery Plan; conservation recommendations for eulachon from the 2018 biological opinion for the Continued Operations and Maintenance of the Columbia River System; and the critical uncertainties for eulachon identified in the Council's 2016 Fish and Wildlife Program Research Plan. The Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife further recommended including eulachon spawning stock biomass as a high-level indicator and fund annual monitoring of eulachon spawning stock biomass. The two agencies also recommended adding eulachon as an emerging program priority and addressing critical uncertainties. The U.S. Geological Survey recommended that the program include efforts to identify and prioritize actions that support the NOAA Fisheries recovery plan for eulachon, establish a monitoring plan for eulachon and determine important spawning areas and

distribution, and determine the role eulachon may have as a prey item for sea lions if the availability of eulachon reduces predation risk for juvenile salmon. In the comments received on the recommendations, the Oregon Department of Fish and Wildlife and Washington Department of Fish and Wildlife reiterated the need for more robust stock assessments for eulachon, including the high-level indicators. Bonneville commented that the primary threats to eulachon appear to be climate change and ocean fisheries and also questioned the relationship of dam effects to eulachon status, noting that the differences between Columbia and Fraser river trends should be evaluated further as eulachon in undammed rivers appear to have the same temporal variation as those in the Columbia River.

The provisions in the Eulachon strategy and elsewhere in the 2014 Program provide the necessary support for the measures included in the recommendation. This includes recognizing the protection and conservation actions in recovery plans and biological opinions as measures in the program that can be drawn from to address the impacts of the hydrosystem on eulachon. Consistent with the recommendations, the strategy's principles and measures already recognize the importance of understanding the role of eulachon within the river ecosystem; the need to monitor and evaluate the importance of the tidal freshwater, estuary, plume and nearshore ocean environments to support the recovery of eulachon in the Columbia River basin; and the possible role of eulachon as alternative prey for sea lions. 2014 Fish and Wildlife Program, at 97-98.

Note that the program's Eulachon strategy stated a particular intent to draw information from the NOAA Fisheries' recovery plan and other developments for use in developing the program's biological objectives and performance indicators for eulachon, as well as called for monitoring and evaluation of the status of eulachon to track these objectives and indicators. Id., at 97. Part I of the draft Addendum includes qualitative program goals and objectives for eulachon, calling on the program to contribute to maintaining a stable and increasing population trend for eulachon, with a specific performance indicator to track spawning stock biomass of Columbia River to assess whether eulachon biomass is stable and/or increasing, all as part of program performance. Draft 2020 Addendum, at 21. The performance indicators also will track generally the program's progress in addressing research critical uncertainties, which will include those related to eulachon. These provisions are consistent with the recommendations.

The Council did not identify out of the recommendations a particular implementation need with regard to eulachon that needed emphasis in Part II of the draft Addendum. Nor did the Council alter or amend the list of emerging priorities in the 2014 Program. The recent biological opinion and the recovery plan identify both the uncertainties with

eulachon and a set of assessment and conservation measures to address the state of eulachon. The 2019 Columbia River System biological opinion notes the high level of uncertainty over whether and how the hydrosystem operations analyzed in the opinion will affect, benefit or harm eulachon, while also concluding that the actions intended to improve estuary habitat will likely improve the productivity of phytoplankton in the lower river, the primary food source for larval eulachon. A set of conservation measures in the biological opinion are thus intended to promote eulachon conservation and address these uncertainties regarding changes in the hydrograph of the Columbia River and adverse effects to eulachon larval and juvenile survival in the estuary, plume, and ocean. These measures call on the federal action agencies to monitor and evaluate temporal and spatial species composition, abundance, and foraging rates of juvenile eulachon predators at representative locations in the estuary and plume; monitor, and evaluate the causal mechanisms, e.g., shifts in the timing, magnitude, and duration of the hydrograph of the Columbia River, and migration/behavior characteristics affecting survival of larval eulachon during their first weeks in the plume-ocean environment; and monitor and evaluate the ecological importance of the tidal freshwater, estuary, plume, and nearshore ocean environments to the viability and recovery of the Columbia River subpopulation of eulachon. These measures are part of the Council's program as well, per the provisions of the Mainstem Flow and Passage provisions of the 2014 Program, and provide sufficient direction as to what to implement so that further direction in the draft Addendum is not necessary. And because of the level of uncertainty involved, including the level of uncertainty over hydrosystem responsibility, the Council concluded at this point that matters should be left to the federal action agencies and NOAA, working with the relevant states and tribes, to sort out responsibility for implementing these measures and those in the recovery plan.

Subbasin Plans

In 2004-2005 and 2010-11, the Council adopted into the program 59 subbasin management plans for every Columbia subbasin, mainstem reaches and the estuary. The plans were developed by subbasin planning teams consisting of state and federal fish and wildlife agencies and tribes and representatives of other regional and local organizations. The key elements of each subbasin plan are a 10-15 year management plan based on a technical assessment of the subbasin's historical and existing conditions and an inventory of past accomplishments and ongoing activities. The subbasin plans are the source of specific measures and objectives to draw from for program implementation, especially habitat and production measures. The Council has also acknowledged that in the years since it adopted the subbasin management plans into the program, relevant protection, recovery, mitigation and implementation planning has continued to occur – much of it on the foundation laid by the program – which updates and add to the program's measures. 2014 Program, at 108-09, 110-11, 183-84, 191-98; <https://www.nwcouncil.org/subbasin-plans>.

The Council received a limited number of recommendations in this amendment cycle directly addressing subbasin plans. The Lower Columbia Fish Recovery Board recommended the Council adopt the Lower Columbia Salmon Recovery and Fish and Wildlife Plan as part of the program; establish a clear process and timeline for bringing all subbasin plans in line with current NOAA-approved recovery plans; and establish an ongoing process for updating subbasin plans concurrently with recovery plan updates. The Cowlitz Tribe supported this recommendation in a comment. The Spokane Tribe of Indians recommended fully implementing subbasin plans, and also that the Council update subbasin plans consistent with subbasin planning guidance and stakeholder participation. The Washington Department of Fish and Wildlife recommended that project review processes be used to regularly update subbasin plans.

The Council's approach has been to recognize recovery plans as appropriate follow-on planning to the subbasin plans, and to recognize the measures in the recovery plans as a source of measures to draw from for implementation to benefit the relevant listed species. That would seem to be as effective for now – and much more cost-effective – than altering the subbasin plans themselves to match recovery plans and other follow-on planning. The day may come when the subbasin plans themselves need updating, but the Council did not find in the recommendations a pressing need for that now. Linking project reviews and subbasin plan updates will be a method to consider at that time as well. If and when the Council and its program partners decide it is time to invest resources in updating subbasin plans, the Council will provide notice of that intent ahead of time and in essence run an amendment process directly focused on that effort.

How the Program is Implemented

Program measures

The implementation section of the 2014 Program begins by describing the different types of “measures” that are in the program and where to find them. Tributary, subbasin, estuary and mainstem reach measures are also collected and summarized in Appendix O. 2014 Program, at 110-12, 191-98.

The Council received a number of recommendations to add to or change the program measures. Some of the recommendations sought to edit or add to the general basinwide measures included within each program strategy, or to the mainstem specific measures. *Those recommendations have been summarized and responded to above, in the discussion of the program strategies.*

The Council also received various recommendations (e.g., from Columbia River Inter-Tribal Fish Commission, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, Confederated Tribes of the Colville Reservation, Cowlitz Tribe, Shoshone-Bannock Tribes, Burns Paiute Tribe, Coeur d’Alene Tribe, Nez Perce Tribe, Oregon Department of Fish and Wildlife, Confederated Tribes of Grand Ronde, Kootenai Tribe of Idaho, Spokane Tribe of Indians, NOAA Fisheries, U.S. Fish and Wildlife Service, Upper Columbia Salmon Recovery Board, Lower Columbia Estuary Partnership, Public Power Council et al, American Rivers, Ogle) to include specific mainstem and subbasin measures in the program, including actions committed to in the Columbia Basin Accord extensions; in the most recent Columbia System Operations Biological Opinion; in any updated or soon to be updated recovery plans for salmon and steelhead, Kootenai River white sturgeon, and bull trout; in various lists or tables of specific measures that are updated versions of measures already in the program. Entities (Oregon Department of Fish and Wildlife, Nez Perce Tribe, Spokane Tribe of Indians, Confederated Tribes of Grand Ronde) also recommended that measures included in the 2008-2009 and 2013-2014 amendment processes be carried over and included in the next Program. *As described elsewhere, the Council considers the language of the 2014 Program, including the measures described therein, to be sufficient to encompass these recommended measures, including the updated versions of slates of measures already in the program, such as in the Accord extensions, biological opinions, and updated recovery plans.*

The Council also received comments in the recommendations related to program measures. The Spokane Tribe of Indians commented that the Council should conduct a

review of all Accords and agreements similar to Accords to ensure their consistency with the applicable program measures effective at the time, and provide a report to the public. Bonneville commented that while the Council has the authority to decide what measures to include in the program, Bonneville then must decide how to act consistent with the program, which includes examining whether the "measures" constitute appropriate guidance for the Administrator to follow and that while the program includes many provisions, including broadly stated goals, policies, implementation processes, and prospective initiatives - not all of them are measures that meet the substantive criteria established by the Act.

The Council notes that it has regularly reviewed the implementation commitments in the Accords for program consistency, through project review and at times of program amendments. The particular problem identified in this amendment process through the recommendations of the Spokane Tribe of Indians and others in the Lake Roosevelt area is not that implementation of the Accord activities is problematic or inconsistent with the program, but instead that one area of the basin without an Accord in particular – the blocked area above Grand Coulee/Chief Joseph dams - is suffering from a lack of comparable mitigation implementation consistent with the program. Draft 2020 Addendum, at 36-37.

The Council agrees with Bonneville that once the Council includes measures in the program, Bonneville must decide whether and how to use its fund and otherwise act “in a manner consistent” with the program. That determination by Bonneville has many facets, but it does not include deciding for itself whether the Council properly included the measures in the program under Sections 4(h)(5)-(7) – that is a matter for the Council to decide, as Bonneville notes.

Investment Strategy

The 2014 Program included an investment strategy to assure funding is provided to program priorities – both existing and emerging – in order to maximize the biological response resulting from ratepayer investments. As explained in the program, the Council recognizes that ratepayer funding requires some control and that there is not unlimited funding to address every need for fish and wildlife affected by the development and operation of the federal hydrosystem all at once. To assure thoughtful use of Bonneville’s funding to maximize benefits to fish and wildlife, the Council identified principles and priorities to guide funding and the implementation of program priorities by Bonneville, the Corps, the Bureau, project sponsors, and their partners. To this end, the Council both recognized the existing program priorities that explain the

bulk of ongoing program implementation and also detailed a list of emerging program priorities linked to a set of measures for implementation over the next five years. 2014 Program, at 114-17.

In this program amendment cycle the Council received a number of recommendations related to the investment strategy. Many concerned the list of emerging priorities, recommendations either to retain some element of the emerging priorities or add a program element to that list. *In retaining the entirety of the 2014 Program, the Council is retaining the description of the investment strategy, including the statements on existing priorities and emerging priorities. As the Council described in Part II of the draft Addendum, the Council expects Bonneville and others to continue to make progress in implementing these program priorities, including the emerging priorities. Draft 2020 Addendum, at 35, 41. The Council did not add to the list of emerging priorities. Most of the recommendations seeking to retain items on the emerging priorities list or to add items to that list have been addressed above in the discussion of the program strategy most relevant to a particular recommendation. For example, Washington Department of Fish and Wildlife recommended that sturgeon and lamprey remain on the emerging priorities list and that eulachon be added. By leaving the statement of emerging priorities in the 2014 Program as is, the Council did the former and not the latter, as explained in the sections above on sturgeon, lamprey and eulachon. Further recommendations related to program priorities are addressed here:*

The Burns Paiute Tribe recommended that the existing priorities in the program be addressed before new priorities are adopted. *The Council did not add to the statement of existing or emerging priorities.* The Spokane Tribe of Indians conversely recommended that anything from the 2014 Program's emerging priorities list that has been completed or received substantial implementation funds should be removed from the list. The Spokane Tribe of Indians also recommended that the emerging priorities list include the completion of Phase One for reintroduction of anadromous fish into the blocked waters of the upper Columbia, and that priorities across the Basin should be developed consistent with geographical objectives that address inequity throughout the Basin. *The Council did not remove or change the emerging priorities list – none have been implemented in a way that would make them no longer a priority for the program. This includes the priority on blocked area mitigation, and consistent with the Spokane Tribe of Indians recommendation the Council made a strong point in Part II of the draft Addendum that this area needs a significant increase in the level and extent of mitigation implementation, as discussed in the section above on mitigation in the blocked area strategy. Draft 2020 Addendum, at 35, 36-37, 41.*

The Confederated Tribes of Grand Ronde recommended that the program continue to include the list of principles and priorities to guide the funding and implementation of program priorities and emphasized four specific priorities, including the principle that Bonneville fulfill its commitment to meet all of its fish and wildlife obligations, that program funding levels take into account the level of impact caused by the federally operated hydropower system and the off-site protection and mitigation provision of the Northwest Power Act enabling program investments in related spawning grounds and habitat, that the council continue to evaluate the distribution of funding to provide fair and adequate treatment across the program, while maintaining the current funding allocation, and that the priority work funded through the Columbia River Fish Mitigation Program should not go unfunded because of competing priorities between districts of the Corps. *The Council agrees with these recommendations and comments, and concluded that the text of the 2014 Program supported the concepts even if not always worded in this way, and thus revisions to the text were not needed.*

The Confederated Tribes of Grand Ronde also recommended that the Council solicit for new projects to implement unfunded subbasin measures that are in the program. *The program itself is not ordinarily the place to decide to solicit projects for funding and implementation. Also, the Council developed subbasin plans as an ongoing source of measures that can be drawn from for implementation to provide offsite mitigation through habitat and production improvements, and not as a list of measures all of which must be implemented at any particular moment. How extensive is the implementation of the measures in the subbasin plans at any one time is dependent on ongoing implementation discussions and considerations focused through Bonneville, which will be further informed by the increased attention to program performance described in Part I of the draft Addendum. The Council is further involved through its work in reviewing ongoing and new projects proposed for implementation, and through identifying important program areas in which implementation seems lacking in certain ways. That is the focus of Part II of the draft Addendum.*

The Confederated Salish & Kootenai Tribes commended the Council for continuing to support funding for the Accords and other long-term agreements that provide stable funding and predictability for both fish and wildlife managers as well as Bonneville, but while also noting that not all fish and wildlife managing agencies have entered into Accords. This includes the Salish & Kootenai Tribes, which has a different, shorter-term (if also multi-year) arrangement for funding its habitat protection projects. The Confederated Salish & Kootenai Tribes recommended the Council continue to support effective mitigation activities, no matter what the funding vehicle may be. *The Council concurs – preserving the existing protection and mitigation priorities and activities of the program does not depend on the funding vehicle.*

The Washington Water Trust recommended that the water transactions program be made a program priority, and several entities (Trout Unlimited, Washington Water Trust, Freshwater Trust, and National Fish and Wildlife Foundation) recommended that the water transactions program receive full funding. *These recommendations have been addressed in the discussion above on the Habitat strategy. The water transactions program is an example of something that has been part of the program's existing priorities for some time. That did not change with the draft Addendum.*

A recommendation from the Lower Clearwater Exchange Project – a self-identified collaborative group that consists of Nez Perce County Commissioners, the City of Lewiston, the Lewis Clark Chamber of Commerce, Lewiston Orchards Irrigation District (LOID), and the Nez Perce Tribe committed to the completion of the “Lewiston Orchards Project Water Exchange and Title Transfer Project” – called on the Council to include what is called the Lewiston Orchards Project in the program and give its implementation and funding the highest priority. The Nez Perce Tribe, Trout Unlimited, Idaho Rivers United, and Nez Perce County Board of Commissioners all commented in support. The Tribe's comments in particular recognized that this is an unusually specific project recommendation, but that its “direct, immediate, real world benefits to fish and wildlife, and its status as an ongoing project that is not at a theoretical or planning stage, merits its recommendation and prioritization within the Fish and Wildlife Program.”

The Council agrees that the program amendment process is not ordinarily the place to raise such a project-specific implementation issue. The Lewiston Orchards Project is part of the overall Lapwai Creek anadromous fish habitat improvement efforts, and as such is already a measure in the program and part of the program's existing priorities – through the Clearwater Subbasin Plan, the Nez Perce Tribe's recommended measures over the last decade, the tributary habitat implementation aspects of NOAA's FCRPS biological opinions, and the Snake River basin recovery planning. It is also part of the broader Lapwai Creek Anadromous Habitat project funded by Bonneville as part of BiOp implementation, and implemented in a manner involving some these entities, the Nez Perce Soil and Water Conservation District and the Bureau of Reclamation. The recommendations and comments did not identify a particular implementation issue other than to recognize this project as an important program activity, and thus the Council did not include in Part II of the draft Addendum an implementation provision related to this project. To the extent there is an implementation issue, the Council recommends the parties work to resolve it within the context of tributary habitat implementation under the Biological Opinion, and alert the Council outside of an amendment process if further assistance is needed.

American Rivers recommended a list of program priorities intended to improve declining salmon runs through climate change impacts: innovative spill operations; engaging in the CRSO NEPA review and EIS process; developing a plan to address temperature issues; investing in monitoring to better understand limiting factors in tributaries, mainstem, and estuary; accommodating Phase Two work for reintroduction above Chief Joseph and Grand Coulee. American Rivers also recommended that the Council consider the recommendations from the Southern Killer Whale Recovery Task Force as a priority for the program and act quickly and effectively to implement the recommendations. *Most of these recommendations have been discussed above with regard to various program strategies – i.e., in the discussions as to how the Council handled recommendations regarding the Climate Change strategy; innovative spill operations and the Mainstem strategy; the killer whale task force recommendations for hatchery production and the Fish Propagation strategy; and further progress on reintroduction above Chief Joseph and Grand Coulee dams and the Mitigation in Blocked Areas strategy. The priorities of the program, both existing and emerging, remain as stated in the 2014 Program, and relate in some way to most of the items recommended. With regard to Washington’s Southern Killer Whale Recovery Task Force recommendations more generally, the recommendations from that task force most relevant to the Columbia and the program involve hydrosystem operations, especially spill; artificial production as addressed above; and consideration of the possible benefits of breaching one or more mainstem dams, a topic under study as one alternative in the current Columbia River System Operations NEPA process, also discussed above with regard to the Mainstem strategy.*

American River was not the only entity to mention the CRSO NEPA process - several entities referenced the EIS in progress and recommended that the program preserve and promote the flexibility necessary to adapt the program to any changing needs and outcomes/information that result from this process (Confederated Tribes of the Umatilla Indian Reservation, Columbia River Inter-Tribal Fish Commission, Bonneville, Public Power Council et al., and American Rivers). *The Council will track the progress and outcome of the CRSO EIS, and use the Power Act’s program amendment provisions if program revisions seem warranted.*

NOAA Fisheries recommended that the Council continue to coordinate with various entities to ensure the program plays a significant role in funding recovery actions for listed species affected by the hydrosystem, with a particular recommendation that the Middle Columbia River steelhead population remain a program focus. *Helping the region avoid jeopardy and achieve recovery of listed salmon and steelhead and other species affected by the hydrosystem remains a program priority. Spill and other system operations and offsite habitat and production mitigation actions intended to protect and*

mitigate for hydrosystem impacts on middle Columbia spring Chinook (not listed) and middle Columbia steelhead (listed) are both equal program priorities that receive significant attention in program implementation (and the same actions often benefit both). This illustrates a key aspect of the Council’s program, and how it both supports and differs from Endangered Species Act requirements.

From perhaps the opposite perspective Sierra Club et al. commented that the program and the Northwest Power Act are independent of and greater than the Endangered Species Act, and thus the program and its measures should guide, rather than follow, the actions in the biological opinions and other Endangered Species Act documents. *The Council agrees the mitigation and protection obligations under the Northwest Power Act are different from the obligations under the Endangered Species Act, touch on more species affected by the hydrosystem, and impose obligations to continue to protect and mitigate listed species even if they come out from under Endangered Species Act protection. The Council simply recognizes that the actions committed to in the Endangered Species Act decisions are also actions that protect and mitigate under the Northwest Power Act and thus are program measures (many of which did in fact originate in the program). The Council relies on its recommending entities for additional measures and objectives not captured in the Endangered Species Act documents.*

Number one on the list of emerging priorities in the 2014 Program is to “[p]rovide for funding long-term maintenance of the assets that have been created by prior program investments.” 2014 Fish and Wildlife Program, at 116. The Council has been pursuing this objective through an asset management subcommittee the Council set up after the completion of the 2014 Program, working with Bonneville, the fish and wildlife managers and others.

The Council received a number of recommendations and comments in the recommendations on this effort and priority. Idaho Department of Fish and Game and Idaho Office of Species Conservation recommended that the Council continue to place high importance on operation and maintenance on the program’s investments; that the Council, Bonneville, and managers discuss advantages and disadvantages with settlement agreements to ensure that long-term maintenance needs for fish screens are met; and that the Council and Bonneville, working with the managers, revisit the repair and replacement cost analysis for hatchery infrastructure as many of the project costs underestimate true costs and do not include installation and labor cost. Montana Fish, Wildlife & Parks recommended the Council explore creative ways to provide needed funding for operation and maintenance, such as capitalized long-term agreements thereby reducing the impact to ongoing expense budgets that support mitigation project. And the Nez Perce Tribe recommended specific language for the principles section of

the investment strategy to state that all Columbia Basin hatcheries constructed for hydropower mitigation should be maintained at a level consistent with other project purposes and that federal agency budgets should fund the maintenance of these hatcheries consistent with the requirement for equitable treatment. Bonneville identified development of a strategy for prioritizing funding for the operation and maintenance needs of existing mitigation investments within the constraints of a fixed budget as one of the most pressing priorities that the program faces. *The Council appreciates these comments and recommendations. The Council concluded that the existing language in the 2014 Program is sufficient to support further implementation of the asset management priority consistent with the perspectives in the recommendations, and will work to ensure these points are considered as the work continues. The Council did include a performance indicator to track progress on whether maintenance needs are addressed as called for in the asset management effort. Draft 2020 Addendum, at 26.*

One principle in the 2014 Program's investment strategy is that the Council will continue to evaluate the distribution of funding to provide fair and adequate treatment across the program, and meanwhile, the Council will maintain the current program funding allocation guidance of 70% anadromous fish, 15% resident fish, 15% wildlife, funding guidance adopted a couple of decades ago as part of an effort to increase implementation of the resident fish and wildlife mitigation needs, at time when the proportion of program funding to resident fish and wildlife was well below these percentages. As discussed above in the section on the Mitigation in the Blocked Area strategy, the Spokane Tribe of Indians and other tribes in the Lake Roosevelt area object to the limited level of mitigation implemented in that blocked area, and have identified the funding allocation language as part of the problem, although the Council never intended that language to be a limit on accomplishing needed mitigation.

Thus these tribes recommended a number of different approaches to allocating and prioritizing program funding as part of the remedy, redirecting the funding from the traditional 70-15-15 split to various alternatives with more of an upriver priority or focus. E.g., as already discussed above in the section on the Blocked Areas Mitigation strategy, the Spokane Tribe of Indians and the Coeur d'Alene Tribe recommended that at least 45% of program funding be directed to the blocked area above Chief Joseph and the Grand Coulee dams, while the Kalispel Tribe of Indians recommended that 40% of program funding go to the blocked waters of the upper Columbia. The Coeur d'Alene Tribe and the Kalispel Tribe of Indians also provided an alternative - anadromous fish substitution projects should be funded out of program's allocation to anadromous fish allocation, while all funding aimed to mitigate for impacts to resident fish be directed to the blocked area in the upper Columbia until resident fish harvest opportunities in the blocked area equal the combined anadromous and resident fish harvest elsewhere in

the basin. The Spokane Tribe of Indians and the Kalispel Tribe of Indians also recommended additional principle language for program funding allocation and prioritization that would achieve the same ends: First protect, mitigate, and enhance fish and wildlife affected by the hydropower system but underserved by the program; then areas with the highest proportion of unmitigated construction and inundation losses; then adequate operation and maintenance funding for long-term projects; then long-term settlement agreements; then loss assessments and mitigation for unquantified (operational) impacts; then data management; then research, monitoring, and evaluation; then regional coordination; then improving program efficiencies; then updating subbasin plans. The Kalispel Tribe of Indians further recommended the Council make structural changes to the Program to ensure that mitigation is equitably implemented across the basin. The Spokane Tribe of Indians further recommended a measure to protect land, habitat and water through a 'top-down' approach, prioritizing headwater habitats in the Upper Columbia, and, enhance ecosystem function and species diversity over the long term in highly perturbed and novel ecosystems. And the Spokane Tribe of Indians also recommended new program language directing Bonneville to fund new projects for non-Accord entities in the area above Chief Joseph and Grand Coulee dams, with the Council creating and implementing a review process for this purpose and then directing Bonneville to fund new projects beginning 60 days immediately following the adoption of the 2019 program.

As discussed above in the section on the Mitigation in the Blocked Areas strategy, the Council understands the frustrations in particular with lack of implementation of mitigation activities in the blocked area above Grand Coulee/Chief Joseph dams. The Council addressed that failing in strong language in Part II of the draft Addendum, at 36-37. The Council concluded that the most effective solution is not to reallocate program funding away from productive work elsewhere in the basin, or radically change the investment strategy principles, but instead to insist that comparable mitigation take place in this area, as already called for in the 2014 Program, at 83-84, 116. Neither the investment strategy principles and historic budget allocation guidelines nor the need to continue funding and implementing productive work elsewhere in the basin should be used an obstacle or limit on making this happen.

Finally, Bonneville commented in its recommendations on program funding matters that its budget has limited flexibility to accommodate new or expanded work, and also only a limited capacity for maintenance of past investments, identifying (as noted above) the development of a strategy for prioritizing funding for the operation and maintenance needs of existing mitigation investments within the constraints of a fixed budget as one of the most pressing priorities that the program faces. Bonneville also noted that it would like to continue working with the Council to identify new or different ways to

maximize mitigation outcomes and the value of investments. It noted that competitive processes in which sponsors propose projects for consideration under regionally-vetted criteria, such as the Columbia Basin Water Transactions Program and Willamette Wildlife Mitigation Program, promote creative mitigation approaches and great return-on-investment. *The Council appreciates the Bonneville comments and will look for various opportunities to work with Bonneville to maximize outcomes as noted. The Council's ramped up commitment to program performance should align well with this aspiration. The Council also appreciates Bonneville already-large commitments to program funding, and the need both for multi-year budget certainty and to hold spending in the foreseeable future within the relative range of recent spending. The Council has also noted, in Part II of the draft Addendum, a handful of important implementation needs consistent with the program priorities that Bonneville needs to find a way to accommodate and protect without compromising other productive work.* Draft 2020 Addendum, at 35-43.

Implementation Procedures Program Coordination

The Council received a number of comments in the recommendations related to how program priorities are funded and implemented. The topics addressed here overlap with those addressed in the last section, but are separated for discussion for emphasis.

Most prominent, a number of the state fish and wildlife agencies and tribes expressed concern - in recommendations, in comments on recommendations, and in comments to the Council during the development of the draft amendments - with certain aspects of how Bonneville implements, funds and manages program projects, and asked the Council to exercise greater oversight. In various ways, the Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, the Nez Perce Tribe, the Burns Paiute Tribe, and the Confederated Tribes of Grand Ronde in particular all called on the Council to review recent and future project funding decisions by Bonneville that reduce funding levels and modify projects. In their perspective, as Bonneville manages both individual projects and its overall budget and seeks efficiencies in both, Bonneville must provide substantial weight and deference to the expertise of the fish and wildlife managers in managing their projects - and that the Council and the program should specifically direct Bonneville to do the same. They recommend that as Bonneville acts to modify projects and manage contracts to seek project and budget efficiencies, hold budgets stable as costs increase, etc., the Council should review Bonneville's proposed actions to ensure that the projects remain consistent with the intent of the program and the Northwest Power Act; and when

Bonneville manages projects in ways that change projects and result in deviations from the proposed project's scope and intent, the Council should seek further scientific review by the ISRP to ensure that projects remain viable and valuable to Program goals. They proposed new program language that would have Bonneville defer to the fish and wildlife agencies and tribes in managing their projects and work and ensure that Bonneville administration is outcome-driven, consistent and adaptive. The Burns Paiute Tribe commented that the Council should provide oversight to Bonneville through existing review mechanisms to guide decisions regarding implementation of program measures and funding levels. The Kootenai Tribe of Idaho called on Bonneville to consider the integrated nature of the overall Kootenai River program, so that funding the different pieces of the program supports the overall effectiveness of the Kootenai program, and allow the Tribe greater flexibility in managing their program. Another set of fish and wildlife entities (Montana Fish, Wildlife & Parks, Columbia River Inter-Tribal Fish Commission, Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation) commented in various ways about the need for *both* the Council and Bonneville to seek administrative efficiencies in their own organizations in implementing program work, including eliminating or streamlining redundant processes with net savings in those administrative efficiencies returned to the program for cost savings. Columbia River Inter-Tribal Fish Commission, Yakama Nation, and Confederated Tribes of the Umatilla Indian Reservation combined those comments with comments about the need to recognize and defer to their roles, authorities and expertise – built into the Accords and in the Accord extensions – in project management.

The Council addressed these comments in the portion of Part II of the draft Addendum about “how the program is implemented.” The Council applauds Bonneville’s project and program management in general, but also agrees on the need for and intends to exercise greater oversight over program and project management to ensure productive program work is not compromised through project and budget management activities intended for other purposes. This includes seeking and heeding the advice and input of the fish and wildlife agencies and tribes as to how project, contract and budget management actions might affect the substance of the work. Draft 2020 Addendum, at 41-43.

A second area of emphasis for some concerned what is known as the “cost-savings” effort. The Council’s explicit expectations with the list of emerging priorities in the 2014 Program were that Bonneville would implement these priorities and fund any new fish and wildlife obligations that might result first from identifying savings within the current program and then as necessary from additional expenditures, with the clear caveat that savings from the current program should not compromise productive projects that are addressing needs identified in this program. An example given was that “additional

funding can be obtained when projects complete their goals, such as a research project, or when a project is no longer reporting useful results.” 2014 Fish and Wildlife Program, at 116-17. Following the program adoption, the Council organized a “cost-savings workgroup” to help Bonneville identify precisely these kind of savings. Bonneville also conducted its own effort to find program “efficiencies” of substantially greater amount.

The Council received a number of comments in this amendment cycle on the cost-savings effort. The comments in general supported the continuation of the ongoing effort to find program savings and efficiencies, but also that the effort needed to be more open and transparent both in terms of what savings are identified and what the savings are directed toward. Examples include: The Upper Columbia Salmon Recovery Board and Spokane Tribe of Indians recommended that the Council’s cost savings effort continue to ensure that limited resources are leveraged to address emerging issues that influence the success of mitigation efforts. The Spokane Tribe of Indians also recommended that the Council adopt a public cost savings process that would include a 30-day public comment period for new work and that all savings be directed towards emerging priorities and not away from Fish and Wildlife Program funding. Montana Fish, Wildlife and Parks commented in appreciation of the efforts to identify administrative efficiencies and streamline or eliminate processes that are redundant or less useful or cost effective than originally anticipated, recommending a number of areas for the Council to explore for additional administrative cost-savings including: multi-year contracting, project bundling, and developing programmatic environmental compliance coverage for recurring types of mitigation activities requiring such analysis. The Columbia River Inter-Tribal Fish Commission provided comments supporting the good work accomplished by the cost savings workgroup and encouraged the continuation of the workgroup, but recommended inclusion of tribal representation.

The Council committed in Part II of the draft Addendum to develop “an improved public process” to find cost savings in the existing budget. The Council also stated that it expects at least most of the savings will be reinvested in the program in a manner subject to Council recommendations. Draft 2020 Addendum, at 43.

For a third topic, in the guidance that accompanied the Council’s letter requesting program amendments recommendations, the Council noted it was considering developing an “action plan” of implementation items as part of the amended program. Three entities explicitly picked up on that idea and recommended that the Council pursue an action plan for program implementation over the next five years. The U.S. Geological Survey recommended priority actions be identified by selecting and applying specific criteria for prioritizing and sequencing restoration actions. The Upper Columbia Salmon Recovery Board recommended that the Council use the Upper Columbia

Recovery Plan and Biological Strategy to develop the action plan; work with the Upper Columbia Salmon Recovery Board to draft the action plan and identify research, monitoring and evaluation strategies to support adaptive management of the action plan; and set aside a small percentage of the existing investment in each province to be managed locally for monitoring. American Rivers recommended that the Council's action plan be informed by quantitative objectives guided by the ISAB.

The Council appreciates that these entities took the care to respond to the “action plan” concept. In drafting the Addendum to the 2014 Program, the Council recognized that the bulk of the program would continue in ongoing implementation. Thus there was no need for a program-wide action plan of the type perhaps envisioned by these comments. Instead the Council concluded, based on the nature and extent of the recommendations, that the near-term “action plan” needed had two specific elements: an increased emphasis on program performance and adaptive management that included a reorganization and more clear statement of the program’s goals, objectives and indicators and a small handful of implementation needs that are not likely to occur unless explicitly stated and emphasized by the Council. That is the purpose of the draft Addendum.

Finally, several entities, including Columbia River Inter-Tribal Fish Commission, Yakama Nation, and Confederated Tribes of the Umatilla Indian Reservation, emphasized the importance and necessity of regional coordination – and regional coordination funding - as a way to work across the region and participate in processes such as the program amendments and project review. They recommend that the program continue to support and maintain regional coordination funding. Several entities recommend specific coordination activities. The Spokane Tribe of Indians recommended that the Council assist with funding coordination amongst entities around and adjacent to Lake Roosevelt, including the Lake Roosevelt Fisheries Evaluation Program, Lake Roosevelt Management Team, the Lake Roosevelt Hatchery Coordination Team, and transboundary water quality groups, and that the Council should direct Bonneville to fund the Lake Roosevelt Forum for the foreseeable future as an integral part of the blocked area mitigation. The Public Power Council et al. recommended that the Council further increase its value as a regional coordinator by engaging the region on regional efforts such as the Biological Opinion development and implementation, the CRSO EIS process, predation reduction efforts, ocean conditions and their impacts on the anadromous fish runs, and the benefit of the FCRPS as a carbon-free energy source. Also, American Rivers recommended that the program coordinate with the Northwest Forest Plan to include its Aquatic Conservation Strategy as it supports many of the Program’s goals and objectives in maintaining and restoring aquatic and riparian diversity in the ecosystem. NOAA Fisheries recommended that the

program emphasize regional partnerships to leverage cost share opportunities to fund recovery actions during financially lean times.

The Council retains the language on program coordination in the 2014 program, sufficient to support the activities described in the recommendations. 2014 Program, at 121-22. The coordination recommendations in this amendment cycle generally make sense, and the Council will work to make sure matters are coordinated accordingly. Whether there is value in a continuing program contribution to the Lake Roosevelt Forum can be a topic for discussion as Bonneville works with the Spokane Tribe of Indians and others to implement the provision on blocked area mitigation in Part II of the draft Addendum.

Project Review

Independent Scientific and Economic Review

The 1996 amendments to the Northwest Power Act directed the Council to oversee, with the assistance of the Independent Scientific Review Panel, a process to review projects proposed for funding by Bonneville, and to appoint additional peer review groups. The ISRP reviews proposed projects and makes recommendations to the Council as to whether these proposals are based on sound scientific principles, benefit fish and wildlife, have a clearly defined objective and outcome with provision for monitoring and evaluation of results and are consistent with the priorities in the program. The project review process is a required and critical component for implementing Bonneville's portion of the Council's fish and wildlife program. More generally, independent scientific review is an important part of fish and wildlife program development, implementation and performance evaluation, and occurs both through the project-review work of the ISRP and through the broader reviews by the Independent Scientific Advisory Board that the Council jointly oversees with NOAA Fisheries and the Columbia basin tribes.

The Council received a significant amount of comments and suggestions about project review in the recommendations. The Nez Perce Tribe, Oregon Department of Fish and Wildlife, and Washington Department of Fish and Wildlife suggested a number of general changes to the project review process along with edits to the description of project review in the program. These included that the Council, action agencies and co-managers should work together to determine project funding and review paths for each type of project; for on-going projects, the Council, action agencies and co-managers should work together to streamline the review process, develop timelines and processes; the Council should prioritize reviews based on prior findings and oversight

including follow through on projects with conditional Council recommendations; the Council should reduce review time, increase cost-effectiveness and improve transparency in the review process, including allowing project sponsors more direct contact with the ISRP to clarify questions or points through conference calls, webinars or field visits as appropriate; and, for the Council, Bonneville, and basin-wide co-managers to work together to provide the ISRP with more specific direction and review parameters, better define the ISRP rating system, and determine when a response loop is necessary and what can be addressed during the contracting process.

The Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife and Kalispel Tribe of Indians further recommended the Council consider an entirely different review regime for ongoing projects that would allow for reviewers to act as program partners within the subbasins. As an example, these entities recommended the Council establish regional review panels - one each for the upper Columbia, Snake, mid-Columbia, and lower Columbia - to be composed of two at-large members selected by subbasin co-managers, one or two representatives from NOAA Fisheries/U.S. Fish and Wildlife Service, a tribal representative, and two members assigned to the subbasin by the ISRP. Members of these regional review panels would attend project review exchanges or workshops to understand the subbasins, co-manager objectives, and the existing spectrum of projects. The regional panels would then review the projects in their area and work together to identify and address any concerns, discuss progress, and share ideas for improving the projects and the program. Action items and a formal record would be developed becoming an integrated part of future reviews. The idea is that review panels of this nature would have a baseline understanding of local basin issues, advance knowledge of their respective concerns, and create an informed dialogue that would eliminate misunderstandings and the lost time that goes into the back-and-forth of the present project review response loop.

The Columbia River Inter-Tribal Fish Commission, supported by the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and Confederated Tribes of the Warm Springs Reservation of Oregon, encouraged the Council to seek project administration efficiencies from within the program itself, particularly within its categorical project review process. The Columbia River Inter-Tribal Fish Commission commented that it intends to work with Bonneville and the Council to identify areas for efficiency in the ISRP review process. These comments came as part of a broader explanation by the Commission that the Accord extension agreements include provisions for project administration efficiencies that recognize the tribes' expertise, roles, and responsibilities in project administration and implementation, recommending that the Council support and recognize the tribes' substantial expertise regarding biological, physical, cultural and social environments within which they operate to

manage treaty fisheries and implement projects. The Yakama Nation similarly identified and recommended the inclusion of the specific project administration efficiencies detailed in the Accord extension agreements. These provisions recognize the tribes extensive project and resource management expertise in project reviews by the ISRP and project contracting at Bonneville; seek efficiencies in project administration that will reduce delay, increase certainty in accomplishing project goals, support coordination with project cosponsors, comply with applicable federal acquisition regulations, fulfill environmental compliance responsibilities and comply with applicable tribal financial policies; encourage work to streamline requirements for contracting reporting and environmental compliance through project bundling, multi-year contracting, and other actions; encourage collaboration; support in person meetings; and implement and administer projects in a manner that is timely and efficient, consistent with the legal rights of the treaty tribes, complements the tribes' current and future management actions, and recognizes the action agencies' general trust responsibility to the treaty tribes.

The Kootenai Tribe of Idaho asked that the Council and Bonneville recognize the geographic, integrated and long-term nature of their projects and review them accordingly, with coordinated ISRP/project reviews, project guidance and funding recommendations that recognize the integrated nature of the Kootenai Tribe of Idaho's fish and wildlife program, encourages long-term agreements, and supports maximum flexibility and accountability within the Tribe's program.

The Spokane Tribe of Indians also recommended a modified scientific review structure for ongoing projects that have longstanding support and investment. The example provided in the Spokane Tribe of Indians recommendation was that hatchery operations and maintenance projects would be reviewed using monitoring and evaluation reporting and ISRP interaction to assure that implementation is on the adaptive management path. Science review would occur within timelines logically associated with hatchery operations and would either confirm existing directions or offer new alternatives based upon the information and data collected and presented via project/program monitoring and evaluation.

The Confederated Tribes of Grand Ronde recommends that provincial/regional reviews be implemented at least once every 10 years (that is, at least one such provincial review every two program amendment cycles) to reprioritize work and maximize benefits.

In the draft Addendum the Council recognizes that the Council will need to "continuously adjust" the project review process so that it plays a meaningful role in

providing information for evaluating program performance along with assessing individual projects – and vice versa, as the program performance effort will feed information and needs into project review. Draft 2020 Addendum, at 33-34. The Council is open to exploring all of the ideas described in these recommendations as long the reshaped project review process remains consistent with the independent review requirements of Section 4h(10)(D) of the Act and delivers value in constantly improving how the measures implemented under the Act benefit fish and wildlife in a more cost-effective manner. The Council concluded that using the draft program Addendum itself to script the project review process is not a necessary or useful idea.

In comments relevant to this and the previous section, the Public Power Council, et al. commented in full support of the independent scientific review of each and every recommended funding proposal, and recommended the Council establish a prioritization and review methodology that promotes projects with clear goals and success metrics that ensure program projects are providing value by maximizing fish and wildlife benefits and that allow the region to measure the value of any mitigation project. Public Power Council et al. recommended the following criteria for ranking project proposals: links to hydropower impact, produces in-place/in-kind mitigation, improves ecological functionality, produces broad biological benefits, benefits anadromous fish stocks, and particularly Endangered Species Act listed species/stocks, improves the effectiveness of other projects or efforts, produces measurable results, and represents a unique work effort. The Public Utility District No.1 of Snohomish County similarly recommended that each activity proposed by the program, or any project or activity proposed to accomplish the goals of the program, include an explicit demonstration of how that activity will further the goal of rebuilding fish and wildlife populations adversely affected by the construction and operation of the Columbia River basin hydroelectric dams.

The Council agrees that all actions and projects must describe how the project sponsors expect the activities will further the goals and priorities of the program to assist species affected by the development and operation of the hydrosystem, and include appropriate objectives and metrics to that end. The Council is comfortable that program projects and activities do generally meet this standard – ISRP review in particular includes testing whether fish and wildlife projects will provide benefits to fish and wildlife consistent with program goals, objectives and priorities. The increased emphasis on program performance described in Part I of the draft Addendum should also provide substantially increased amounts of information and assessments to this end.

**2020 Addendum
to the 2014 Columbia River Basin Fish and Wildlife Program**

AEERPS Statement [placeholder]

STAFF DRAFT